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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Nitrogen Fixation in America

To the majority of chemists in this country the actual situation as regards the development of nitrogen fixation plants in America is generally a little obscure. For this reason, therefore, the facts disclosed by Dr. H. A. Curtis at the recent meeting of the National Fertiliser Association are not only full of interest but significant as showing that the fixed nitrogen industry is far from being at a standstill in the States. At present seven important undertakings have plants in actual production, the combined output being approximately 70 tons of ammonia per day. Three of these plants are located at Niagara, two in Western Vancouver, one at Seattle, and one at Syracuse. In addition, the Commercial Solvents Corporation is installing a plant of 15 tons per day capacity, while two or three smaller installations are in course of erection. All of these are synthetic ammonia plants, and their combined output by the end of the present year will be approximately 103 tons of ammonia per day, or about 25,000 tons of nitrogen annually.

So far as the synthetic industry is concerned, there would appear to be a certain amount of nervousness in America, for it is recognised that the next few years will probably be critical ones for artificial nitrogen producers, their view being that the market must be wrested from by-product ammonia if the synthetic plants are to thrive commercially. The situation in America is, of course, scarcely comparable with that over here, for whereas the greater part of the total ammonia produced in this country is used as a fertiliser, in America there is a comparatively large demand for anhydrous ammonia (which calls for about 15,000 tons of nitrogen per annum), while the aqua ammonia market absorbs about another 24,000 tons. America has already, of course, an exportable surplus of sulphate of ammonia, and considering the fact that the domestic production will inevitably increase, that the synthetic producers will probably force upwards of 200,000 tons into the fertiliser market, and that the world price of sulphate is already below the level prevailing in the United States, Dr. Curtis regards it as a fairly certain prediction that the price of sulphate in America will reach a lower level than has ever previously been touched. There can be no doubt that the capture by the synthetic producers of the domestic markets for anhydrous and aqua ammonia is already in progress, and there is every probability that the synthetic product will ultimately supply all the markets for ammonia used in forms other than fertilisers. It is an interesting point, however, as to whether synthetic producers will, once they have satisfied the demands of the secondary markets, be wholly attracted by the opportunity afforded for entering the lists with sulphate of ammonia, for here the price levels are lower, and the advantage of starting with an exceptionally pure initial product is by no means so apparent.

A New Ammonia Carrier Wanted

FOR some years now a considerable amount of attention has been given to the possibility of combining ammonia with "carriers" other than sulphuric acid, and the numerous compounds now listed by the Badische undertaking are sufficient evidence of what is possible in this direction. In America the same problem has arisen, for it is argued that there would be little advantage in making sulphate of ammonia, since that country is already producing a surplus of that material. There has been a good deal of talk lately about using phosphoric acid as a carrier for ammonia, the resulting product (ammonium phosphate) having much to recommend it, but the question of cost is the material and uncertain factor. Dr. Curtis points out that at present there is no process in commercial operation in the United States that can produce phosphoric acid more cheaply than the ordinary sulphuric acid method. A new electric furnace method appears to have received a certain amount of attention at the Anniston works of the Federal Phosphorus Co., but the cost of manufacturing phosphoric acid by this process is largely dependent upon the cost of electric power, and it is questionable whether this

particular acid could be made sufficiently cheaply for use as a fertiliser.

It has lately been reported, however, that the Badische company has been quietly investigating the possibilities of the Liljenroth method of producing phosphoric acid, and that it has adapted one of its cyanamide plants for the purpose. It is said, in fact, that the particular cyanamide plant used is one having a capacity of 30,000 tons per annum. It would seem, therefore, that the Germans are trying out the process on a large scale, presumably for the manufacture of diammonphos and related products. It may be recalled that the Liljenroth process consists in producing in the first place ordinary yellow phosphorus in an electric furnace. The phosphorus is then blown in vapour form, together with steam, over a catalyst at about 1,000° C., whereby phosphoric acid is yielded and hydrogen liberated. The process is generally regarded as promising; but, again, its practicability from the commercial standpoint would, as with so many processes where electrical energy is involved in large quantities, appear to depend largely on local facilities for obtaining cheap power.

America's Tribute to Priestley

In connection with the jubilee meetings of the American Chemical Society at Philadelphia a pilgrimage is to be made on Sunday next to the grave and home of Dr. Joseph Priestley, the discoverer of oxygen, at Northumberland. The circumstances are of considerable interest and the spirit in which the arrangements have been planned is good. In August, 1874, a group of 74 American chemists, called together by Dr. H. C. Bolton, then dean of the School of Mines at Columbia University, met at the grave of Joseph Priestley in Northumberland to mark the one hundredth anniversary of the discovery of oxygen. At the grave and within the walls of the mansion built by Priestley eighty years before, associations were formed which led two years later to the organisation of the American Chemical Society. On Sunday next, after fifty years of enormous growth, the Society will meet again at the Priestley house, now preserved as a shrine of American chemistry by the chemical alumni of the Pennsylvania State College. Only three of the original group survive. Of these Dr. S. A. Goldschmidt, of New York City, a member of the Society for fifty years, and Professor A. A. Breneman, also of New York City, are expected to be present. Dr. F. W. Clarke, of the U.S. Geological Survey, is at present in England.

Although only two of the original 74 members can be present, hundreds of their scientific successors will make the pilgrimage. The hosts on this occasion will be Mrs. Priestley Forsythe, a great-granddaughter of Priestley; the Central Pennsylvania Section of the American Chemical Society, in whose territory Northumberland lies; and the G. G. Pond Memorial Association, composed of alumni of Penn State, former students of Dean Pond, who answered his appeal six years ago and purchased the old mansion. It was already a century and a quarter old and had fallen on evil days, having been used during the war as a boarding house for immigrant labour. It was purchased at public auction to save it from destruction. It has been reconditioned, and a fireproof museum, designed by Professor A. L. Kocher, of the American Institute of Architects, an authority on early Pennsylvania architecture, has now been erected on the lawn to house a complete collection of Priestley's original laboratory apparatus and other personal effects. Much of this is still in existence, owing to the devotion of Mrs. Forsythe and others, and will be permanently on display in this museum. Northumberland was a frontier settlement when Priestley arrived there in 1794, beautifully situated under hills at the junction of the east and west branches of the Susquehanna River. The house stands directly on the banks of the east branch of the river. Near by is the brick church, built in 1834, which still houses the Unitarian congregation organised by Priestley in 1794. Half-a-mile away is the town's only cemetery, where Priestley lies, with his wife and seventeen descendants, two of whom were also "Dr. Joseph Priestley."

The ceremonies will be brief but fitting. There is no room at the grave for a service, so that the pilgrimage itself and perhaps the laying of a flower will constitute the simple homage of each individual chemist. A visit will then be paid to the house, including the spacious room which was used by Priestley as a laboratory, and the new museum containing his original apparatus. The meeting will be held on the lawn at 2.15 under two tall pines planted by Priestley himself. The porch of the house will be used as a platform. Dr. S. A. Goldschmidt, the only surviving charter member who was present at the 1874 meeting, will give an account of that meeting. Dr. William H. Walker, formerly of the Massachusetts Institute of Technology, who taught at Penn State with Dr. Pond in the early "nineties" and was active with him in the effort to preserve the Priestley house, will speak on the history of the house, and Dr. C. A. Browne, chief of the U.S. Bureau of Chemistry, will speak on Priestley's life in Northumberland and on the relics exhibited. The whole idea is happily conceived, and will be as reverently carried out.

Oil Shale Experimental Work

We learn that the U.S.A. Bureau of Mines has purchased an American type 20-ton oil shale retort, known variously as the Dundas-Howes or N-T-U retort, which will be erected immediately at the experimental oil shale plant of the Bureau near Rulison, Colorado. The new retort will be erected alongside and operated in parallel with the Pumpherston retort of the Scottish type, which is now being heated in preparation for the beginning of experimental operation.

Laboratory experimental work of the Bureau of Mines on oil shale, extending over a period of six years, has indicated two entirely different methods of producing refinable oils from oil shales. Both methods are regarded as fundamentally sound, so far as can be determined by laboratory investigation. In the first method the shale is heated slowly and enough scavenging steam or gas passed through the distilling mass to prevent undue decomposition of the oil. This method results in a relatively low yield of crude oil of relatively high quality, and a relatively low yield of fixed gas of

relatively high heating value. The crude oil so obtained can be sent to the refinery stills without further treatment. In the second method the shale is heated rapidly, care being taken not to reach temperatures high enough to decompose the oil products, and a large excess of scavenging gas is passed through the distilling mass to remove distillation products as rapidly as they are formed. This method yields a maximum quantity of crude oil of relatively poor quality and a maximum volume of fixed gases of relatively low heating value. The crude oil so produced requires a preliminary coking distillation before going to the fractionating stills, but either method, properly operated, apparently will produce the same results in finished oil products.

Engineers of the Bureau, in making a selection of retorts for the experimental oil shale plant, took into consideration, first, the desirability of having equipment which would carry out the two different methods of distillation; second, sufficient flexibility of control so that distillation temperatures, distillation zones, gas velocities, etc., could be readily varied and controlled; and third, mechanical simplicity. The Pumpherston retort, the result of over seventy years of practical experience in oil shale retorting in Scotland, exemplifies slow distillation, and the N-T-U retort, under development in large scale units for over three years in California, exemplifies rapid distillation. Both retorts are flexible in control and both mechanically simple. The Pumpherston retort is apparently particularly suited for relatively low grade shales and the N-T-U retort will probably show to best advantage on richer shales. In the opinion of the engineers of the Bureau the two retorts form an admirable combination of experimental equipment for the chief purposes of the retorting investigation, namely: (1) to transpose to retorting units of commercial size the conditions determined by laboratory study most suitable for producing maximum amounts of refinable products; and (2) as large scale study directs, to modify these conditions so as to produce best results at lowest cost. The Pumpherston retort was expected to be put into operation during August, and the N-T-U retort some time this month.

From Oxford to Industry

A RUMOUR of which something was heard during the British Association at Oxford respecting the passage of a distinguished professor from collegiate work to chemical industry is now confirmed by the announcement that Sir Frederick Keeble, Sherardian Professor of Botany in the University of Oxford, has accepted an appointment with Synthetic Ammonia and Nitrates, Ltd., of Billingham-on-Tees, one of the subsidiary companies of Brunner, Mond and Co., for the promotion of research in the application of synthetic nitrogen compounds to agricultural purposes. He will probably be released from his chair at Oxford at the end of next term and start upon his new duties in January. This appointment, as a writer in *Nature* states, marks a further step in the movement towards a closer association of fundamental scientific research with commercial enterprises in connection with agriculture. The growing use of artificial fertilisers renders it imperative that possible fresh sources of supply should be investigated and the value of the products thoroughly tested. As a measure of economy and as a means of protecting agriculturists from loss that might be incurred by using new and comparatively untried fertilisers, research with regard to their economic application is essential, and it is this that Sir Frederick Keeble will endeavour to foster. His wide and varied experience has already brought him into contact with certain aspects of the problem, for on the practical side he has served as controller of horticulture to the Food Production Department of the Board of Agriculture, as assistant secretary to the Board of Agriculture, and as director of the Royal Horticultural Society's Gardens at Wisley, and on the scientific side as Professor of Botany at Reading and at Oxford. The possibilities in connection with the use of synthetic nitrogen compounds as fertilisers are of great importance to agriculture, as was pointed out by Sir Daniel Hall in his presidential address at Oxford, and the development of this line of work will be followed with much interest.

An Italian "Dizionario"

PROFESSOR DOTT. G. VITTORIO VILLAVECCHIA and his Italian collaborators may be sincerely congratulated on the completion of the fourth edition of the important work they undertook to revise and reissue some two or more years ago, namely, the *Dizionario di Merceologia e di Chimica Applicata* (Ulrico Hoepli, Milan). The last of the four volumes, S to Z, has just reached us, and it completes the work with a valuable alphabetical index. The dictionary, or encyclopædia as we should call it, deals with the raw materials and products of the chemical, pharmaceutical, metallurgical, colour, agricultural, textile, and other industries, not only from the technical side but especially in relation to production statistics, import and export regulations, etc. The extent of the work may be judged from the fact that the general index, three columns to the page, occupies about 230 pages. The work is one of international value, and the editors and publishers may justly indulge a sense of satisfaction at its conclusion.

Book Received

THE BUILDING RESEARCH STATION. By the Department of Scientific and Industrial Research. London: H.M. Stationery Office. Pp. 10.

The Calendar

Aug 31 to Sept 12	World Power Conference.	Basle, Switzerland.
Sept 1 to 4	Institute of Metals: Autumn meeting.	Liége, Belgium.
6 to 11	American Chemical Society: 50th Anniversary.	Philadelphia, Pennsylvania.
9 to 10	Refractory Materials Section, Ceramic Society.	Leeds.
20 to 24	Chemists' Exhibition.	St. Andrew's Hall, Glasgow.
26 to Oct. 3	Société de Chimie Industrielle: Sixth Congress of Industrial Chemistry.	Brussels.

The Work of the Government Laboratory

Sir Robert Robertson's Report

The work of the Government Laboratory for the year ending March 31, 1926, is described in the report of the Government Chemist just issued by H.M. Stationery Office (pp. 37, 1s. 6d.).

THE chemical work of the following departments is performed wholly or in part in the Government Laboratories :— Admiralty, Ministry of Agriculture and Fisheries, Air Ministry, Colonial Office, Crown Agents for the Colonies, Board of Customs and Excise, Geological Survey, Ministry of Health, Board of Inland Revenue, Ministry of Pensions, Post Office, Department of Scientific and Industrial Research, Home Office, Board of Trade, War Office, Forestry Commission, Privy Council, and Office of Works.

The work for most of these departments is carried out at the laboratory at Clement's Inn Passage, Strand, London. The laboratory at the Custom House, London, deals especially with Custom samples, while the chemical stations, to which reference is made in connection with the work for the Board of Customs and Excise, deal with Customs samples and some Excise samples. In addition, the Department maintains the laboratory in the Geological Survey Museum for the analysis of ores for the Survey, and carries out the inspection of food stores and supplies for the War Office at the Supply Reserve Depot, Deptford, where also there is a laboratory.

Examination of Samples

The total number of samples examined in the course of the year, including those dealt with at the chemical stations, was 445,606, as compared with 448,106 in the preceding year, a decrease of 2,500. There was a decrease in the number of samples examined of 10,685 at the Custom House branch and of 8,138 at the chemical stations, but the number examined at Clement's Inn showed an increase of 16,323. The samples of wine decreased from 116,547 to 106,395, and of tea from 58,022 to 39,391. There was an increase of 4,755 in the number of samples of offal tobacco for drawback, and an increase of 2,590 in the samples of exported tobacco and snuff. These samples in the previous year fell considerably, owing to the cessation of large exports to the Irish Free State, although there had been an increase to other countries. In the year under review the increase to other countries was well maintained. There were notable increases in the number of samples of imported beer, cocoa goods, and imported spirits and spirituous preparations. The new duties on silk and artificial silk necessitated the examination of over 12,000 samples during the year, and the work in connection with the Safeguarding of Industries Act again involved the examination of nearly 10,000 samples.

In the account given of the testing of cream under the Food and Drugs Acts, it is noted that on and after January 1, 1928, the importation of cream containing preservatives will be forbidden by the Public Health (Preservatives, etc., in Food) Regulation, 1925. In regard to the examination of various samples of cheese an interesting point arises. The examination of cheese was directed mainly to ascertaining the character of the fat—that is, as to whether the fat was milk fat or was mixed with fat of other origin than milk. In the latter case the cheese is required to be marked "Margarine-cheese." Incidentally, the proportion of fat in the cheese was determined and found to vary from 8·3 to 37·7 per cent. of the cheese, or from 19·0 to 68·2 per cent. of the dry matter in the cheese. The results indicate that 57 per cent. of the samples had been prepared from whole milk; 21 per cent. from milk containing from three-quarters to the whole of its fat; 4 per cent. from milk containing from one-half to three-quarters of its fat; and the remaining 18 per cent. from milk containing from one-third to one-half of its fat. As, however, there are no regulations relating to the marking of skimmed or partially skimmed milk cheese, no exception could be taken to any of the importations.

Samples of chocolate confectionery to the number of 2,730 were found to contain spirit. Some of these were liqueur, or imitation liqueur chocolates into which the spirit had been intentionally introduced. Many, however, contained only highly flavoured cream interiors, the presence of spirit being due to the use of flavouring essences containing spirit. Most of these goods fell within the section of the tariff providing for the imposition of an additional duty of ½d. or 1d. per lb. on sugar articles in the manufacture of which spirit has been used. Those having a spirituous strength higher than the equivalent of 1d. per lb. were charged duty on the actual quantity of spirit present. In addition, 28 samples of chocolate confectionery were analysed in connection with the alleged sale of chocolates containing spirits by persons not holding a licence to sell spirits.

Water Testing, River Pollution, Etc.

Forty-five samples of river water and effluents were examined. This work is carried out to ascertain the condition of fishing streams from the point of view of fish life and the effect of certain types of pollution on fish and fish food. In connection with the question of pollution of fishing streams by road drainage, eleven samples of proprietary road dressings and extracts from such dressings were examined for harmful or toxic bodies. The services of members of the staff were utilised in the survey of several rivers. The Board of Agriculture for Scotland submitted 12 samples of water and other materials in connection with the water supply of farm settlements, and reports based on chemical and bacteriological examination were made as to the suitability of the water for drinking and other purposes. In connection with an investigation by the Canadian Government and the Ministry of Agriculture into a new system of ventilation installed in a boat conveying cattle from Canada to this country, about 100 samples of air, which had been taken at intervals and from different holds during the voyage by a representative of the Canadian Marine Department, were examined for carbon dioxide, ammonia, and hydrogen sulphide, and for the proportion of residual oxygen. Four samples of drinking water from the cattle supplies were also examined.

One hundred and ninety-five samples of imported colours, lakes, and other goods were examined to ascertain whether they involved liability to Customs duty, and also to ascertain whether they contained synthetic organic dyes, the importation of which, under the Dyestuffs (Import Regulation) Act, 1920, is prohibited except under licence. The subsidy on home-grown beet sugar has necessitated the examination for assessment duty of a number of samples of sugar. During the year 1,590 samples of beet juice, molasses and refined sugar were received. Of home-grown leaf tobacco, which is being experimentally cultivated in East Anglia and the South of England, 17 samples were examined. For the Home Office a sample of wall-paper suspected to contain arsenic was found to contain 0·007 grains of arsenic per square yard, and a sample of vermin killer containing strychnine was examined in connection with a case of suspected poisoning. In connection with the preparation of zinc sulphate, samples of the zinc ashes, oil of vitriol, and nitre cake were examined for arsenic. It was found that arsenic was present in appreciable quantities, thus accounting for the evolution of arseniuretted hydrogen, which was suspected as the cause of poisoning.

Some work on the acidity of varnishes, carried out at the request of the Chemistry Co-ordinating Research Board of the Department. A specimen of Roman plaster from Caerwent was found to be a lime-sand plaster, and it is stated that its present hardness is a tribute to the excellence of workmanship in preparing such a plaster. In connection with the cleaning of the Leighton frescoes at the Victoria and Albert Museum, washings were examined to confirm that none of the original pigment was removed in the course of the treatment. A silk tassel from a sixteenth century seal was examined to determine the cause of its brittleness, but no clear evidence of destruction by organisms was found, although the individual fibres showed numerous longitudinal and transverse cracks when examined microscopically.

Illicit Drinking and Illicit Distillation

In consequence of complaints regarding the drinking of methylated spirits as a beverage, attention has been given for some time to the possibility of making the methylated spirits sold by retailers more objectionable to taste without interfering

with its use for legitimate purposes, and as a result of these investigations pyridine has been adopted as an additional denaturant for ordinary methylated spirits sold to the public, and also for finish prepared for sale. During the year proceedings were taken in two cases against persons preparing mineralised methylated spirits as a beverage, and attendance was given by members of the staff at the hearings. Convictions were obtained and penalties imposed in both cases. Eighty-four samples of materials and spirituous liquors were examined in connection with 18 cases of suspected illicit distillation. The analytical results in several instances afforded evidence that illicit distillation had been carried on, and members of the staff gave evidence in six prosecutions which followed. In each case a conviction was obtained.

When proceedings are taken under the Sale of Food and Drugs Acts, the Justices before whom the case is heard must, on the request of either of the parties to the case, send to the laboratory for analysis the portion of the sample which has been retained for that purpose. Forty-two samples of food and two drugs were examined during the year. The foods consisted of 34 milks, four butters, two sponge cakes, and one sample each of jam and lemon cheese. The two drugs were samples of medicine made up to a prescription. In 37 cases the results were in agreement, in six cases in disagreement, and in one case partial agreement, with those put forward by the prosecution. The following were the cases in which there was disagreement: One sample of milk alleged to contain added colouring matter did not afford evidence of its presence in the decomposed sample; another sample alleged to be deficient in fat contained 6·43 per cent. of fat; and a third sample alleged to be deficient in fat and in non-fatty solids was found to be deficient in fat but contained 8·55 per cent. of non-fatty solids. Two samples of butter alleged to contain excess of water contained 14·9 per cent. and 15·5 per cent. respectively, and two samples of butter alleged to contain foreign fat did not afford evidence of the presence of foreign fat.

The Proofing of Concrete

(From a Correspondent.)

Concrete is so widely used to-day that it is fast replacing stone and brick as a building material, and tanks and silos are built of reinforced concrete in preference to other more expensive and less permanent materials. Concrete, however, unless suitably treated, is not waterproof, and where alternate wetting and drying are possible the rate of disintegration may be considerably increased. The products of hydration of Portland cement and its congeners are calcium hydrate, which is soluble in water, and calcium silicates and aluminates, which are decomposed by water. When the water contains salts of magnesium or calcium sulphate, which act on the lime in the one case, and on the aluminate in the other, the rate of decomposition and disruption of the concrete may be positively alarming.

There are various methods which may be adopted to make concrete practically impervious to water, but they all assume that the mixture has been well made, and adequate trowelling is an essential preliminary to any proofing process. The concrete should be faced with a fine cement-sand mixture not less than half an inch in thickness, well worked and as smooth as possible. Smoothness is an important point. The methods of making a good waterproof job of concrete may be divided into three classes: (*a*) the integral method, (*b*) the membrane coating, and (*c*) the surface coating.

Methods of Proofing

The integral method consists of the addition of some foreign substance to the concrete when mixing. Slaked lime is generally used—from 8 per cent. to 15 per cent. being the usual proportions—the actual amount being to a certain extent dependent on the fineness of the sand that is being used. The purpose of the lime is partly chemical and partly mechanical, for it fills the voids, and makes the whole mass less porous. It is obvious that for this purpose the slaked lime should be as finely ground as can be obtained, and it should be purchased from a firm of repute who manufacture it for this purpose. The Sylvester process consists of the addition to the mixture of finely powdered alum, and dry soap powder. An insoluble aluminium soap is formed in the pores of the concrete on setting. It is not at all improbable, however, that a large part of the benefits claimed for the integral method of proofing are due to the much more thorough incorporation of the various ingredients of the mixture, owing to the fineness of the powders added.

The membrane coating method consists of the laying down of one or more layers of waterproof paper or textile material coated with tar or bitumen. This method is useful where a wooden floor is to be laid down on a concrete base, as is occasionally the case, and it cannot be applied successfully to walls and surfaces more than 60° out of the horizontal. If a wooden floor is to be laid on concrete some protection of this kind is absolutely necessary. A case came under notice where a wooden floor laid on an unproofed floor rotted quickly on the under side, whilst another section of the same floor laid on a thin bitumen covering over the concrete was as good as when it was first laid.

The third method of surface coating is the most generally used and useful. It can be carried out in any of its various modifications with little trouble and gives very good results. Sylvester's process consists of the application of solutions of soap and alum, applied hot. The soap solution (about 12 ounces to the gallon of any good soap) is applied boiling, well brushed in without frothing, and allowed to dry. The alum solution (about 2 ounces to the gallon) is applied at 70° F., and the work is allowed to remain not less than 24 hours before the next application of soap solution. Two or more treatments may be given, but usually it has been found that two are enough. The reaction between the soap and the alum is to form an insoluble metallic soap which fills the pores and makes an impervious surface.

Various Proofing Agents

A proofing agent that has come greatly to the fore in the last few years, and deservedly so, is waterglass (commercial sodium silicate). A solution of 1 gallon of waterglass in 4 gallons of water covers 1,000 square feet once. An insoluble silicate is formed on the surface of the concrete and for a short distance within the skin, which greatly increases the wearing properties as well as the resistance to penetration by water. It is claimed also that oil tanks are rendered oil tight by this treatment. Hot paraffin wax has been suggested as a proofing agent, but its cost and its liability to damage by abrasion render it less valuable than some other substances.

There are a number of proprietary articles on the market which claim to waterproof concrete, and most of them do the work to a greater or less degree. Some are very efficient, others are not. Most of them contain alum in water solution, and some contain soap. One liquid that was examined, but for which practical tests were not made, contained nearly a fifth of its weight of linseed oil, and the remainder was light petroleum oil with a little paraffin wax dissolved in it. There are also a number of organic silicon compounds available which decompose on exposure to air, the silica being liberated in such a form that it combines readily with the stone or other material such as concrete below it. A preparation for which great value was claimed was a greyish black powder which was chiefly cast iron borings and ammonium chloride (sal-ammoniac). The directions stated that the powder was to be mixed into a thin paste and brushed into the surface to be treated. Not less than two coatings were recommended, with an interval of a couple of days or so to allow the first to rust completely. Tests made under laboratory conditions following the instructions very closely showed this preparation to be about 60 to 65 per cent. efficient, which was not so good as waterglass.

The whole question of waterproofing concrete and of securing impermeability under pressure was investigated some years ago by the United States Bureau of Standards, and the conclusions arrived at, given below, are taken from Technologic Paper No. 3 of the Bureau. After lengthy research the investigators concluded:—1. That it is possible to make Portland cement mortar impermeable under 40 feet of water pressure without the use of waterproofing materials if care is used in grading and mixing to obtain a dense mixture. 2. That the addition of waterproofing solutions will not compensate for lean mixtures, poor materials or poor workmanship. 3. That a mixture of well graded sand containing considerable fine material is to be preferred for making an impermeable coating with Portland cement. 4. That if the mixture is right the impermeability is as good with 1 in. as with 3 in.

Ammonia and Benzol Industries

Competition of Synthetic Products

A NOTE of alarm has just been sounded in Germany concerning the probable effects which the development of the heavy chemical industry may have upon the by-products recovery branches of the collieries. In an article which appeared in a recent issue of the *Deutsche Bergwerks Zeitung* it is stated that no illusions should exist as regards the influence of the "rationalisation" of the heavy chemical industry on the structure of other industries. The I.G. is penetrating successfully into the markets of many other German branches of industry with its new process of working. A difficult situation threatens the superphosphate industry through the mixed fertiliser programme of the I.G. But other sides of the chemical industry will also have to take into consideration the possibility of losing lucrative branches of manufacture and of being forced back into the position of more or less dependent suppliers of raw materials.

By-Product Ammonia

The author of the above article states that from this point of view the coal mining industry has every reason for following the development of the chemical industry with close attention. In former years the coal industry derived considerable profit from the by-products resulting from the carbonisation of coal. In particular ammonium sulphate bore a not inconsiderable part of the expenses of the process of carbonisation. At present, however, the state of things has so far changed that in the case of many pits the recovery of ammonia just covers the expenses of working and of the sulphuric acid.

It is true that the coal mining industry belongs, together with the producers of synthetic nitrogen, to the Nitrogen Syndicate, and a sufficient price has been ensured to the former for by-product ammonia until the year 1930. It is, however, already known that the costs of producing synthetic nitrogen are considerably lower than those of producing by-product ammonia. The question thus arises for the mining industry as to what will happen to by-product ammonia when the "close time" expires in 1930. In future years the production of synthetic nitrogen, owing to the programme decided upon, will rise in a steep curve. But no prospect exists of the output of ammonia at the pits growing in a similar way. It is dependent upon the quantity of coke made, and it will presumably be impossible considerably to increase this production in the next few years. But in the measure that the share of the production of by-product ammonia to the total output of nitrogen falls, the justification for taking into consideration the prime costs of this by-product will diminish.

Effect of Price Reductions

The writer of the article goes on to point out that at the recent conference at Biarritz the view was expressed that efforts must be made for extending the sale of nitrogenous fertilisers by means of a considerable reduction in prices; but the coal mining industry will be unable to keep pace with this reduction. The suggestion thrown out here and there of qualitative improvements is of somewhat subordinate importance. Synthetic fertilisers are characterised by great purity. On the other hand, in by-product sulphate there is still in the lower grades a liability to cake owing to the non-elimination of sulphuric acid. In recent years good progress has been made in the quality of the sulphate, but it will never be able to re-establish competitive equality with synthetic nitrogen. Of course, other possibilities exist for rendering useful the nitrogen contained in the coal, but in this direction many promising methods are obstructed by existing patent claims, and it is also questionable whether the costs of production could be lowered to those of the synthetic product. The problem of reducing the prime costs of by-product ammonia will apparently remain insoluble so long as it is impossible to render the contact process, upon which the great success of the synthetic method rests, available to the mining industry.

This circumstance, it is stated, explains the great interest manifested in the process of the Mont Cenis Colliery Co., since the question in this case actually concerns the utilisation of a promising contact process. The process, however, is still kept secret. A patent has been applied for, but not yet granted, and it almost seems as if this is being delayed. So far as can be gathered from the scant information furnished by the directors it appears that two processes are in question. First comes the synthesis of ammonia at pressures below 100 atmospheres and at temperatures of about 400° C. But it is beyond question that an essential condition is the production of hydrogen from coke oven gases. Perhaps this is of even more importance than the actual synthesis of ammonia, as it can be used for many other purposes, as, for instance, the long distance transmission of gas.

Production of Benzol

It is not only in the production of ammonia, but also in that of benzene that the I.G. threatens to compete with the mining industry. In this case, however, the danger is not yet so tangible, but the possibility of this development must be kept in view. Already to-day the supply of benzene is no longer sufficient to meet the home (German) requirements in motor oils for high compression purposes. As a further extension of the use of motors in all branches has to be reckoned with, makers of these engines will have to adapt themselves to the use of fuel oils similar to benzene for low compression. For this reason it seems necessary for the coal mining industry to devote itself to the production of synthetic benzene. At present the industry is in a favourable situation in regard to benzol; in five years the conditions may have greatly changed.

The question as to how the coal mining industry can escape this danger is not easily answered. In all the branches touched upon—the synthesis of ammonia, the synthesis of benzene, the production of hydrogen from water gas, etc.—the dye industry (presumably the I.G.) possesses numerous patents, difficult of evasion. Under the circumstances the author concludes that it is hard to form an optimistic opinion of the prospects of the mining industry with its large number of small and inadequately equipped laboratories, as compared with the uncommonly well equipped laboratories of the dye trust. At the same time he suggests that the coal owners should combine for the purpose of creating a strong organisation to utilise in common the processes and experience of all the pit laboratories, institutes, etc.

Rubber and Allied Products

RUBBER, ebonite, and gutta-percha products of all kinds for use in the chemical and allied trades are manufactured at Silvertown, London, by the India Rubber, Gutta-percha and Telegraph Works, Ltd. (the Silvertown Co.). Among their other activities is the rubber lining of wooden tanks for the storage of hydrochloric acid for all temperatures up to 230° F. Such tanks are also suitable for use with sulphuric acid of specific gravity 1·65 and under, sulphuric acid of all strengths, organic acids such as tartaric, citric, acetic, formic, butyric, etc., alkaline solutions, such as caustic soda, caustic potash, ammonia, etc., and ethyl and amyl acetates and alcoholic liquors. Other rubber products are: acid-resisting rubber hose for use with the tanks dealt with in the foregoing acid plant generally, acid-resisting rubber gloves, mits, etc., and acid-resisting laboratory tubing, corks, mats, etc. Another substance very useful in this connection is ebonite, which has high value as a material for the construction of articles to resist the corrosive action of various liquids. It can be moulded, built up, or machined equally well, is flexible, and possesses a very desirable tensile strength and freedom from chipping. A few other points which commend ebonite for this purpose are that it is easily cleaned down, and, moreover, will not taint any slightly acid solutions which may be used for foodstuffs. It will not absorb water. A few of the better-known compounds with which ebonite may be safely used are: sulphuric acid of sp. gr. up to 1·6 (cold); hydrochloric acid, concentrated (boiling or cold); acetic acid, concentrated; bleaching powders which do not give off chlorine; ammonia and other alkalis, such as caustic soda; ordinary dyes; vinegar, hot or cold; and acids used in artificial silk making. If any of the above compounds are used at temperatures greater than 140° F., the ebonite should be suitably reinforced with metal work. Some of the articles made from ebonite for use in chemical and allied industries are pumps, taps, bends, tubing, etc. Gutta-percha also is a material which has important properties of this kind. It is used for making bottles and test tubes for hydrofluoric acid and lining tanks to contain acids and acid solutions.

The Working of Corrosion-Resistant Metals

By W. S. Calcott

We give below the substance of a paper read in the corrosion symposium at the recent semi-annual meeting of the American Institute of Chemical Engineers by Mr. W. S. Calcott, of the Jackson Laboratory, E. I. du Pont de Nemours and Co.

In the construction of plant equipment that is required to resist corrosion, the methods of working and fastening metals play an important part in service, especially when aqueous solutions are concerned. Any general statements are, of course, subject to numerous exceptions; but certain broad considerations, while doubtless frequently introducing errors, will at least lead to errors on the safe side.

In a general way, methods of working or fastening metals should be such that, when the equipment is in use, electrolytic action is not induced unless the electro-negative metal is protected in some manner from the corrosive liquid. The importance of this effect depends, of course, on the actual magnitude of the rate of corrosion. If this is small enough, as for instance a caustic solution in iron, welded joints, riveted joints, etc., can be employed safely, or steel fittings with cast-iron tanks. In dehydrating caustic in cast-iron pots, however, it has been noted that a steel thermometer well, inserted in the usual way in metallic contact with the pot, had a life of only 36 hours. Insulating the well from the pot increased its life enormously, showing that the effect was electrolytic, as was also indicated by measurements between the pot and well. On account of the difficulty of maintaining the insulation, wells of a different material were selected, but the results were of interest as illustrating the effect of electrolysis even under these conditions.

Effect of Small Potential Differences

One of the most striking illustrations of the magnifying effect of small potential differences on corrosion rates under certain conditions was in the construction of a nickel thermomenter well for a small piece of equipment. The liquid to be handled was strongly acid and also hot. In the first installation, due to an oversight, the nickel pipe and sheet nickel flange were not annealed after machining. Rapid localised corrosion occurred at the junction between flange and pipe, in distinct contradiction to the laboratory results. The assembled well was then annealed carefully and returned to service, upon which the laboratory test of a relatively low corrosion rate was verified. Apparently the cold working of the metal had sufficed to set up a potential difference of more than negligible proportions.

A number of experiences of this type have led, in the experimental work at least, to the standardising of a type of construction in which, as far as possible, the stray current effects are minimised. The principle involved is simply to keep the entire equipment homogeneous. When extremely corrosive liquids are handled in metals, the metals selected are usually lead, a copper alloy, a nickel alloy, or, more rarely, iron-silicon, "stainless steel," or aluminium. In all cases such methods of fastening as soldering and, ordinarily, brazing, are ruled out, as the joint then becomes a constant source of trouble, either due to failure of the seam itself or to stimulated corrosion of the metal adjacent to the seam. When the conditions are very severe, riveting or even bolting is not permissible, and the only corrosion-resistant method of construction is casting. The sensitivity to stimulation by small potential differences in some instances can hardly be overrated. Welding is another method of working that has been a fertile source of trouble, due probably to the inclusion of oxide or carbon in the weld setting up troublesome stray currents. For this reason casting seems to be the safest method of working metal that is subject to strenuous service, whenever this method can be employed, since the highest degree of homogeneity can usually be obtained. Welding, if carefully done, with the exclusion of foreign matter from the seam, is quite resistant, especially if annealed, and mechanical working and fastening, if annealed, are also satisfactory; but soldering and brazing are likely to lead to trouble. In one interesting example in which tubes brazed along a longitudinal seam were used, the tubes quickly opened along the seam. Thinking to remedy this weakness by using a more resistant solder, the tubes were rewelded with silver solder, which was itself entirely insoluble. After a few weeks the metal of the tubes, with the exception of the silver soldered seam, was extensively perforated, the seam itself remaining almost unattacked.

Confirming Laboratory Tests

When the corrosive solution is not an electrolyte, these objections to the use of dissimilar metals obviously do not apply, and combinations as unlike as brass and iron can be safely used under such conditions. It is due possibly to such anomalies as this, and to the difficulties introduced by the stray currents caused by such apparently small differences in metals as can be caused by cold working to the extent of threading, that laboratory tests are sometimes held in disfavour. At this laboratory, after tracing down the cases in which the plant or semi-works did not check the laboratory tests, after allowance has been made for such factors as potential differences between different metals or different parts of the same metal, velocity effects, erosion, oxidation, and variations in the composition of the solution actually used and that sent for test, there have been but few cases in which the final result has not been found to agree closely with that predicted, so that the operating men have developed considerable confidence in the statements of the laboratory as regards the most suitable metals for a given set of conditions.

A minor item that has at times given some trouble has been in the use of gaskets. Frequently these are made wide enough to allow a safe margin after the bolt holes are cut, and when installed are thus practically the full width of the flange. If any liquid leaks along the gasket as far as the bolts, trouble is almost certain to result. Even when the bolt is of the same material as the vessel, which is presumably capable of resisting corrosion satisfactorily, the highly strained condition of the bolt is likely to cause trouble. If, instead of this construction, a narrow gasket is installed inside the bolt circle, any leakage that reaches as far as the bolts themselves becomes obvious immediately, and can be remedied before any damage is done.

A Pilgrimage to Priestley's Grave

The illustration below shows the old home of Joseph Priestley, the discoverer of oxygen, at Northumberland, Pennsylvania, to which the American Chemical Society are paying a pil-

grimage on Sunday next. The smaller building on the right was Priestley's laboratory. The house was acquired some time ago, and will be preserved as a museum. The contents include a complete collection of Priestley's original laboratory apparatus and many personal effects. Reference to the event is made in our editorial notes.

Wigan Mining and Technical College

During the summer term the chemistry and physics departments of the Wigan Mining and Technical College were inspected by a special committee of professors appointed by the Institute of Chemistry. As a result of this inspection the Institute will in future recognise the chemistry courses held at the College for the purposes of its examinations, a privilege not hitherto enjoyed by the College. Students completing the College Courses in Chemistry will now be able to sit for the Institute's Associateship Examination. In addition, the College Advanced Part-time Courses in Electrical Engineering are now recognised for the award by the Institution of Electrical Engineers of Higher National Certificates.

Sir A. Mond and the Coal Problem

Decrease of Production Essential

BEFORE leaving Southampton on a visit to Canada on Saturday, August 21, Sir Alfred Mond, M.P., the chairman of the newly appointed National Fuel and Power Committee, made an interesting statement on the coal situation.

"My views," he said, "on the coal situation are exceedingly simple. I believe the solution is decreased output. At the present moment we are suffering from a 15 per cent. over-production of coal in this country, which has resulted in the slaughtering of prices and led to the present economic situation. In my view, unless you regulate production to accord with consumption you will never get out of the economic difficulty which the coal industry is now in. You will have alternate periods of boom and slump. Such has been shown in the coal industry over a long period. That is bad for the coal industry and its development, and detrimental to industry generally. What we ought to aim at is to stabilise all coal prices by properly controlling our production and our sales."

It was extremely difficult, Sir Alfred added, to translate methods of production from one country to another. No doubt modernisation was necessary in our mines, although more was being done than people thought. "One essential, to enable the coalowner to modernise and introduce new methods, is to ensure peace in the industry for a number of years to enable him to obtain the co-operation of capital, which will fight shy of the coal industry as long as it continues on the lines of perpetual warfare between coalowners and miners. Another necessity is the real and sincere co-operation of workmen to get the best use out of the improved appliances, which has not been forthcoming in many instances. Where these appliances have been introduced some owners have found that, after they have spent large amounts of money in putting in new machinery, output has remained practically the same, due to influences at work to prevent the machinery being used to best advantage, and also the men from earning the best wages which they undoubtedly could achieve.

The Loss of Markets

"What is necessary is that a profit-sharing scheme should be devised to encourage the men to take a greater interest in their work. The ascertainment scheme, started in 1921, really a profit-sharing scheme, suffered from the fact that the individual workman in the individual colliery did not feel that his contribution could be any real factor. What is wanted is that a man on a particular job should get a more direct result of his effort. That is not easy—it is very difficult in fact—but it ought to be done in some way or another."

Asked his opinion as to the loss of markets, Sir Alfred said: "It will take weeks before the mines can get up to anything like normal production again, and it will also be a period of long duration before the markets lost are won back again. In consequence of the strike the price of coal is likely to go up, and the export trade will be faced with many difficulties. In the first instance, many people, having experienced difficulty in getting coal, have resorted to other types of fuel, and secondly, where coal itself is required, a great many of what are normally our markets have been stolen from us." Sir Alfred added that he did not hold the opinion that oil would oust coal, for, apart from the fact that it was too expensive, there was also the disadvantage that there was not enough of it. With regard to the Fuel Economy Committee, of which he has been appointed chairman, Sir Alfred said he presumed that it would investigate the most economical use of fuel in all its forms in industry, and possibly in domestic use. He had not yet had an opportunity of meeting his colleagues on that Committee, but its constitution was such as to make expert knowledge in many branches of the subject available. There was no doubt that the Committee would have a wide field of investigation before it, including, for instance, the improvement of the existing practice in the utilisation of steam, the relative advantages and economies of electrification power, gas, and oil. There were many interesting points, too, regarding the possibility of better qualities of coal, the losses which occur in the transportation of coal from the time it is cut to the time it reaches the consumer, and the conversion of coal itself into other products, such as fuel, oil, or petrols. The field offered scope for observation of a continuous character, for invention and scientific research in all countries were always creating new aspects and changing the economic relations of one form of power production compared with another.

Concluding, Sir Alfred said: "If the Committee achieves a useful purpose it will be able to lay down authoritative guidance for those connected with the industry. This will make goods cheaper, for the cheaper we can produce the power, the lower will be the cost of production, the very fundamental of prosperity and trade."

Impressions of Germany

Interview With Sir Max Muspratt on Recent Visit

SIR MAX MUSPRATT, who recently returned from Germany, has communicated to the *Liverpool Daily Post* some interesting impressions of his visit, which extended over three weeks. His first remark was that he found the Germans once more as amiable as he knew them thirty years ago and working hard against depressing difficulties.

"When I was in Germany last year," Sir Max said, "I found everyone very hopeful. They realised that they had great difficulties to face, but they thought they could surmount them. I found this year a deep feeling of depression. There has been very great disappointment. Last year there was an excellent harvest, but, owing to internal competition among the farmers, the prices were so low that many of the farmers were nearly bankrupt, and, although low prices had some effect in reducing the cost of living, this was not sufficient to counterbalance the great losses of the farmers.

"With regard to industrial products," Sir Max Muspratt continued, "there has been greater production than the post-war markets can absorb, and many of the main products of industry are being sold practically without profit. All these factors are having a very depressing effect, and although there is nothing in the nature of a panic, there is great bewilderment and a great deal of unemployment. On the other hand, in certain industries, notably the chemical industry, remarkable developments have been made, and the great chemical combination known as the 'I.G.,' if not actually making large profits as yet, seems to have great possibilities before it. But even this has its adverse side, for it produces a great sense of insecurity among the considerable number of works that are not covered by the 'I.G.' combination. So far as he could judge, the nation was taking these matters with a patience possible only to Germans, and they were doggedly working on, trusting to some improvement taking place soon. They had not been accustomed to governing themselves, and the present Government barely had the experience to help seriously in all the difficulties. At the same time, it was the only possible form of government, and he could hear of no real attempts to revert to the monarchy, except by small handfuls of old-fashioned people.

"Looking at the holiday side, I have nothing but pleasant recollections. The pre-war bragging German is no longer in evidence, and the nation as a whole is once again the kindly, pleasant people I knew thirty years ago and have heard about from my father earlier still. I doubt if there is any pleasanter place outside England for a holiday than Germany at the present time. It is true that the large hotels are very expensive, because their *clientèle* is so limited that they have to exist on the American traffic, such as it is, and the few other visitors, commercial and other. But the whole of the side valleys of the Rhine are as charming as ever and the expenses are not unreasonable."

Valuable Iron Ore Discovery

MR. A. C. MARTEN, a builder, announced at a recent meeting of the Burma Engineering Society that between 64 and 68 miles from Rangoon one of the richest of iron ore deposits in the world had been discovered. He was reticent as to the exact location of the deposits, but it is believed that they lie about ten miles from a well-known station on the Rangoon-Moulmein line. An analysis of the samples sent to the United States, Germany and Japan showed the ore as most valuable and containing no sulphur. Japan had offered to take all the iron that Burma could produce, as she had no iron deposits of her own.

H. G. Wells's New Book

"The World of William Clissold"

THERE is a school of philosophy that holds non-existence to be preferable to existence. Its adherents aver that the pains and miseries of mortal life so heavily outweigh its pleasures and amenities that it may be said of every individual that it were better that he had not been born. These rather doleful individuals fortunately constitute a small though distinguished minority. On the other side we have the great majority of mankind, who regard the experience of living as eminently desirable and artists who in paint and prose and rhyme present it to us as a splendid adventure, exuberant and intoxicating. I confess myself on the side of the majority, believing that if a man might come into being at the summit of his powers one morning at five o'clock and at five o'clock the next morning be annihilated, the twenty-four hours' experience of the wonder and beauty of the earth would have made the experience worth while. The man who lives to a ripe old age is the possessor of twenty-five thousand such days. The interest is so varied and sustained that it is small wonder that to most of us the adventure is indescribable. Here and there there is an author who has the ability to turn a search-light on his world and to describe things about which most of us are vague and inarticulate. H. G. Wells is such a writer and *The World of William Clissold* (E. Benn, Ltd., Vol. I, 7s. 6d.) is his latest and best picture of contemporary life.

The greatest of English critics said "the proper study of mankind is man," but mankind does not agree with him. It wants that study presented to it in the form of the story of an individual. It might be objected that William Clissold, writing exclusively of his own adventures, is an egotist, but in literature, as in life, the attractiveness of egotism depends entirely on the egotist. If he be a conceited man, full of self-admiration and vainglories, his egotism will disgust his readers; on the other hand, a man may write about himself during his whole life without once tiring or offending, but to accomplish this he must be interesting in himself, a man of curious and vagrant moods, gifted with the cunningest tact and humour; then the experience which he relates must at a thousand points touch the experiences of his readers so that they become partners in his game. That is what William Clissold does. He is an industrialist, but he is very much more. It is an insult to a man in any walk of life—be he manufacturer, retailer, tinker, tailor, beggarman or thief—to suppose that he is solely a man of business or entirely a tinker to the exclusion of all else.

There are some things we all have in common—childhood, adolescence, parenthood, acquisitiveness, the mental process of inquiry—whence, whither and why. These are just as much the stuff of life as the labels which attach themselves to us in the course of getting a living.

William Clissold is of immense importance to himself, just as each man is of importance to himself. His world began with his consciousness and ended only with his decease. He may be summed up as an average man thinking aloud of all things visible and invisible, of life and death, society and socialism, industrialism, politics, religion and marriage. He was a man of business, but much more, just as readers of this journal are much more than men of business: he was an inquirer and a thinker. He looked at his world, considered its mysteries and muddles, and brought the ripe experience of sixty years of varied life to the writing of a book which embodies on every page thoughts which at some period of your own life you have also thought. Mr. Clissold is a man having a very real likeness to every other thinking man of this generation. Circumstances and details differ in the case of each individual, but are we not all born to grow to maturity, to work and sleep, to agonise, to wonder and ultimately to perish? The stuff of human life is in the main everywhere the same. Hence the appeal of the author who takes life for his subject and makes it live.

William Clissold started his career (which thousands of people in this country during the next few days will find of such absorbing interest) very much under a cloud. A weeping, ineffective mother. A brilliant—too brilliant—father, whose meteoric career as a company director in the city ended in embezzlement, flight, capture, trial, and a dose of potassium cyanide as he left the dock unable to face disgrace and seven years' penal servitude. Then a step-father, and the process known as the going out into the world to get a living in company with a brother Dickon, who was a realist if ever there was one. He, Dickon, would have moments of pure rage against the social system that environed him, that seemed so lax and yet was so difficult and dangerous to assail. Speaking of him, William says: "I remember him once in Holland Park. 'How the devil are we to *get* at them?' he cried suddenly as though he had been stung. 'How the devil?'"

"Get at who?" said I, in the London idiom.

"In these houses. *Look* at them! Every one stands for thousands a year. And I can't think of a dodge against them, not a dodge. Idiot and fool I am!—unfit to survive. Like silly, fat sheep inside a wire fence they are, and I'm like some brainless wolf. Look at this outfit coming along! Perambulator, two nurses, and a Newfoundland dog. Large, expensive toy elephant and a ball. Fine fleecy blanket. All for one ratty, beady-eyed kid! . . . You ugly little mite! Where does daddy get it? Where does daddy *get* it?"

Or again, Dickon's disinterested advice to his younger brother. "The world's a world of private adventure yet far—far beyond our lives. Take it or leave it, that's what it is. And as I want to live in this world, and not in a world that isn't here, I'm Individualist. It isn't a matter of chance as you seem to think. It's a matter of necessity . . . . And then for freedom—and, if you like it, disinterested service—scientific research—or anything else—as the mood may take you."

Is not that just what thousands of enterprising youngsters really feel in their bones even when they are flirting with Socialism, Marxism, Syndicalism and Communism? Their hearts, in their generosity, may assent to the spice of humanitarianism in some of these doctrines, but in their heads they know that society is largely concerned with the acquisition of sixpences, and that they must "go for them" or be submerged. Many of the intellectuals, physically or temperamentally unfitted for the struggle, discover that in a world of good things, they have small earning capacity, and that the cakes and ale are not for them. Then, imbued with envy, hatred and malice, they endeavour to burn the cakes and abolish the casks.

The first volume consists of two parts. The first, the frame of the picture. The second, "The Story of the Clissolds," and "My Father and the Flow of Things." The account of the chasing of the swindling father across Europe reveals H. G. Wells at his very best. Other chapters are concerned with psychoanalysis of Karl Marx, Money and the History of Toil Through the Ages; there are some highly concentrated sections. The book is by no means a home of rest for tired readers, but no one who reads at all, will care to miss the view of the world as seen through the eyes of William Clissold.

The reader rises from a perusal of the first volume intensely interested, and cannot but look forward with insatiable curiosity to succeeding volumes which are to be published later.

S. P. H.

Fire at United Water Softeners, Ltd.

ON Saturday, August 28, a fire broke out in a building at Brentford occupied by the laboratories and testing sheds of United Water Softeners, Ltd. The building contained large stores of highly inflammable chemicals, and the fumes given off rendered the work of extinguishing the outbreak extremely difficult and hazardous. The firemen were warned that they ought to be supplied with milk as a precaution against the effects of the gases, which had already become apparent. Fortunately a milk float was close at hand, and from this a large quantity of milk was obtained, and was supplied at regular intervals to the firemen, who worked in relays. Breathing became very difficult on account of the fumes, and the men had to be relieved from time to time in order to get fresh air. Luckily there was little wind, and the gases for the most part went upwards and spent themselves in the upper air. Almost the whole of the building was destroyed, but the flames did not reach one corner of the premises, where some particularly dangerous chemicals were stored. The fire was confined to the building in which it originated, and shortly before eight the outbreak was practically subdued. The cause of the fire is at present unknown. No one appears to have been injured.

Reviews

A Manual of Radioactivity. By G. Hevesy, Ph.D., and F. Paneth, Ph.D. Translated by Dr. R. W. Lawson. Oxford University Press. London: Humphrey Milford. Pp. 252. 15s.

In this volume an attempt is made to develop the science of radioactivity from first principles, and to bring together, as a connected whole, all the diverse results of research which have sprung from this source, or which have proved to be closely connected with it. Hitherto, the treatment of radioactivity in books has generally had a historical basis, and this method has been very convenient. The subject has, however, reached a stage where it may be developed more logically. "We have endeavoured," state the authors, "to select and arrange the subject matter so as to give prominence to the didactic point of view, somewhat in the same manner as has long been done in every text-book on the related sciences of physics and chemistry." The historical side is briefly outlined at the end, but elsewhere no reference is made to the names of the original workers. The book is intended for those who wish to get an insight into the science at first hand.

The twenty-seven chapters of the book cover the ground in a very thorough manner, as might be expected from such distinguished authors. Of special interest to the chemist are discussions on the chemical behaviour of extremely small quantities of a substance; on the effects (chemical, physical, and physiological) of rays from radioactive substances; on the application of the radio-elements as indicators in chemical and physical investigations, etc. Particular attention may be drawn to the use of these substances as indicators; for example, in measuring the solubility of almost insoluble substances, or the absolute surface of powders, and in certain other measurements. The properties of the radio-elements are so remarkable that it seems worth while for chemists to take more interest in them, for it is always possible that their use may give rise to results of great economic importance. Dr. R. W. Lawson's translation is very readable.

The Basis of Modern Atomic Theory. By C. H. Douglas Clark, B.Sc., D.I.C. London: Methuen and Co. Pp. 292. 8s. 6d.

"The purpose of this volume is to provide a clear account of the general experimental and logical basis of recent atomic theories." After a chapter on the atomic theory and the methods, depending on kinetic theory and colloidal measurements, which have been developed for the measurement of atomic magnitudes, the author deals with the electron; electricity in gases; radioactivity; the electronic constitution of atoms; radiant energy (concerning the quantum theory and its application to specific heat, the photoelectric effect, etc.); the atomic nucleus: the extranuclear electrons of isolated atoms (concerning Bohr's theory of atomic structure); the extranuclear electrons in combination (concerning the efforts of Lewis, Thomson, Langmuir, and others to evolve an atomic structure to agree with the chemical properties of atoms, and also the views which have been developed in the case of more complicated structures such as organic compounds); and the present outlook. Each chapter is followed by a bibliography of its subject-matter. The book should serve as a useful basis for further reading. Its concluding paragraph is worthy of note: "It is a debatable question as to whither the new knowledge is leading us. One thing, however, would seem to be clear. Benefit can only accrue to mankind so long as development in other directions keeps pace with the advance of science." C. A.

Industrial Chemistry. Edited by Allen Rogers, in collaboration with a number of authorities. Fourth Edition. Volume I: Inorganic. Volume II: Organic. London: Constable and Co. Pp. 1,267. 52s. 6d.

The object of this book, the joint production of a number of American authors, is "to assemble the ideas of a large number of men who are recognised authorities in their respective lines and thus to produce a volume representative of modern American methods and processes. It has been the constant aim of the authors not to give undue attention to minor details in order that the student may more fully appreciate the fundamental principles set forth. The subject-matter is essentially descriptive, without, however, omitting the theoretical considerations necessary for a proper understanding of the subject." The first volume deals with general processes (mainly concerned with mechanical operations); water for industrial use; fuel and power; the mineral acids; elements and compounds; chlorine and allied products; electrochemical industries; lime, cement and plaster; clay, brick and pottery; glass; white lead; zinc oxide and lithopone; pigments, paints, etc.; carbon; iron and steel; and fertilisers. The synthetic production of ammonia from nitrogen and hydrogen and the catalytic oxidation of ammonia to nitric acid are both dismissed with great brevity; in regard to the latter it is stated (p. 206) that "the development of this branch of the nitric acid industry in this country [America] is still in too much of a transition stage to be described in detail here." Volume II, after an initial chapter on commercial organic chemicals, deals with city gas; industrial gases; coal tar and its distillation products; petroleum; wood distillation; oils, fats and waxes (including chapters on special oils and hydrogenation of oils); soap and soap powder; glycerine; laundering; essential oils and flavouring materials; resins, gums, etc.; rubber; varnish; sugar; starch, glucose, etc.; textiles; dyestuffs and their applications; paper; cellulose industries; leather; explosives; glue and gelatin; casein; and dried, evaporated and condensed foods.

The Chemistry of Wheat Flour. By C. H. Bailey, Ph.D. American Chemical Society Monograph Series. New York: The Chemical Catalog Company. Pp. 324. $4.00.

In this volume, the author of which is Professor of Agricultural Biochemistry in the University of Minnesota, "the general treatment accorded to the subject is essentially similar to that which would be involved in discussing the properties of any like food material. Properties of flour must be considered in their relation to (first) the raw material from which it is manufactured, or wheat; (second) the process of manufacture, or milling; (third) its adaptability to the principal use to which the flour is put, or baking." The biochemistry of baking is not discussed at any length, since such a discussion would become too involved and extensive, and it is suggested that a separate monograph devoted to this subject is required. "The baking properties of flour are recognised as the most important criteria of its usefulness and are referred to in the last two chapters." The subject is dealt with under the following headings: historical; wheat in its relation to flour composition; the growth and development of the wheat plant and kernel; influence of environment on the composition of wheat; defects of, and impurities in commercial wheat; storage and handling of wheat; chemistry of roller milling; changes in flour incidental to ageing; the colour of flour and flour bleaching; flour strength and enzyme phenomena; and flour strength as determined by the proteins of flour and colloidal behaviour of dough. The author's statements are clearly based on a very close survey of the literature, to which he himself has made many contributions; frequent references are made throughout to the original workers, and a valuable bibliography is appended. The book bears evidence of the careful and thorough preparation characteristic of the series.

Arsenic in Apples

Dr. W. S. Howarth, the City of London Medical Officer of Health, in his annual report says that arsenic in appreciable amounts has been found in apples imported from the United States. In the City the only apples bearing indications of arsenical deposits were "Jonathans." Samples of these were submitted to the public analyst, who reported that they contained 1-700th of a grain of arsenious oxide per lb. That quantity was so small that the Medical Officer was not prepared to restrict their sale. Observation had been maintained, but no further cause for suspicion had been found. Dr. Howarth considered that as arsenic was a foreign addition apples should be exported entirely free from it. If the principle of disregard of small quantities of poisons was to be accepted, other poisonous substances also, in small quantities, might be added to other foods and the aggregate consumed might be considerable.

Indian Chemical Notes

(From Our Indian Correspondent.)

Since the discovery of mineral oil in the district of Attock, the mining industry in the Punjab has come into certain prominence and importance. The production of oil in the year 1924–25 amounted to 12 million gallons. Search for other fields is in progress, but so far nothing tangible has resulted. Coal, which hitherto was considered non-existent in the Province, has also begun to be mined, and though the quantity as yet is small, it is increasing every year. It is hoped that with adequate transport facilities, the industry may prosper and grow into importance. The mining of salt has also shown good progress, and the production in 1924–25 reached 160,000 tons from 114,000 tons in the previous year.

Discovery of Gold

It has been reported that an extensive deposit of gold has been discovered in the Patiala State, near a place called Narnaul. It is believed that the auriferous area is about twelve to sixteen square miles in extent. The assays hitherto taken from the samples collected by the State Mining Engineer show between one and a half to two ounces of gold to the ton. This is said to compare most favourably with the gold in the Mysore fields. The deposit is considered to be likely to prove all the more valuable because the gold has been found in close association with copper, assaying at about 6 per cent., and sulphur. Even if the gold deposits disappoint expectations, it is held that the copper is a most important discovery.

Tinplate Manufacture

The Indian Tinplate Co. has decided upon carrying out some important capital improvements to the plant with a view to increased efficiency and lower cost of production. These principally comprise (1) a cupola for the manufacture of small castings, and (2) a largely extended machine shop. Among other improvements that will be taken in hand later are a further train of cold rolls, a second annealing furnace, a filtration plant for the tinhouse, an acid disposal plant, and extra cranage. The company has also in contemplation the extension of their works for the refining of palm oil required by them, the local manufacture of rolls, annealing boxes and stands, and the specialised tinplate greases, all of which are now imported.

Climatic Disabilities

A statement by the Indian Tinplate Co. mentions that while the company had taken all possible action to overcome the difficulties in the rolling of steel, they had not anticipated difficulties in the finishing processes. For example, it was found that in the hot weather, when the shade temperature rises as high as 120° F., the process of cooling the plates after annealing took very much longer than had been anticipated. Again, the high temperature of the water used for pickling and tinning was found to cause the plates to dry almost immediately they were taken out of the bath, the result being "water stains," which would not properly tin and which ruined the plates following them in the tinning machine by carrying zinc chloride through to the tin. This difficulty was eventually overcome by the lavish use of sprays.

Soap Manufacture

In his report on the vegetable oil industry in the Punjab, Mr. John Brewis, who was appointed by the Local Government for the purpose, points out the necessity of Government action and recommends the starting of a pioneer factory somewhere in the Amritsar district, consisting of a solvent extraction plant, a cake plant, a refining and splitting plant, and a soap-making plant. Although glycerine has been included in the list of products from such a factory, it is not recommended that any attempt should be made in the present state of the market to recover glycerine in India. There is abundant raw material at hand in the Punjab, the production of oil-seeds being extensive. The oil proposed to be used is cotton-seed oil, coconut oil and mowha oil.

Sugar Production

The total estimated production of sugar in India in the year 1925–26 is 127,500 tons. Out of this, modern *gur* refineries have produced about 41,000 tons, and the factories making sugar direct from cane 36,670 tons, while the balance was the output of small establishments using the country process of refining. An important sugar manufacturing factory which was visited by the Viceroy during his recent tour in the Deccan was the Belapur Sugar Co., which combines extensive cane cultivation with the manufacture of sugar.

Water Sluice Ash Conveying

An Interesting American Report

The subject of the simultaneous quenching and conveying of ash and clinker from boiler and other furnaces is always interesting to chemists, if only because in this way a distinctly alkaline reaction is obtained, and not acid, as when a pile of the red-hot material is sprinkled with water.

It may be remembered that on January 16 last we gave a description of the "Usco" sealed trough ash conveyor, and in this connection a very interesting publication, *Coal and Ash Handling*, has been issued by the National Electric Light Association of New York, which is the Serial Report of the Prime Movers' Committee on the subject for twelve months, 1925/6. This contains a considerable amount of valuable information concerning progress, especially in relation to water tube boilers, during the previous year in the United States, both as regards coal and ash handling. The latter is, however, much the most interesting to the ordinary steam user, and it will be remembered that the main troubles with ash and clinker are that it is red-hot, in all sizes and shapes, often extremely hard with sharp edges, and with ordinary methods of quenching on the lines mentioned is strongly corrosive, due to the sulphur present.

A description is given in the report of a typical application of the "Usco" conveyor to American power station, an equipment at the United Electric Railway Co. at Providence, Rhode Island, which has an "Usco" conveyor on the drag link principle, with stagnant trough 150 ft. long and an incline of 25 ft. in length, handling the ash from three very large water-tube boilers fired with pulverised coal. This general method is particularly applicable to ordinary chemical works or other industrial boiler plants with the trough under the foot plates, and in general to all conditions where it is most convenient to back railway trucks or other vehicles under an overhead ash bunker.

The second method is that of a trough with a rapid travel of water passing through continuously in closed circuit with a centrifugal pump and a large open receiving tank in the ground, the ash and clinker being carried along by the force of the water to the tank and the quenched material fished out as required by a grab operated from a crane or overhead telpher.

Finally a third principle is that of a stagnant trough with an intermittent sluice, the contents being swilled out about every half-hour by a large volume of water. Very many successful plants are now in operation, over 60 in Great Britain alone, and the reduction in the wear and tear as compared with most ordinary methods is remarkable, while the alkaline solution is apparently due to the fact that a comparatively large volume of water dissolves lime, sodium and potassium salts, which does not take place with ordinary sprinkling.

The Limitation of Synthetic Petrol

Sir Henri Deterding, a director of the Royal Dutch Shell Combine, recently indicated that he was optimistic on the outlook for the oil industry. It was in a very healthy state, although its proper development would require an enormous amount of capital, running to hundreds of millions of dollars. The successful production of artificial motor spirit would only be possible with the protection of an enormous tariff. Sir Henri said he had heard of people in Europe proposing a protective tariff of 8os. per ton for petrol, and a whole cargo of oil could be moved for that sum.

He thought that the brightest aspect of the situation was that by 1928 the production of synthetic petrol throughout the world would be only about 50,000 tons per month, and plant for preparing this spirit would amount to exceedingly large sums. The principal group interested in synthetic motor spirit was the Badische Anilin of Germany, one of the foremost dyemakers of Europe, and he remarked that they did not expect a large output of this product for a long time to come.

From Week to Week

MR. W. C. BEARD, a South Metropolitan Gas Co. works chemist, is retiring on pension after 39 years' service.

THE STEETLEY LIME COMPANY is reopening its limestone quarries and has also lighted up one of its basic furnaces.

POISON GAS WAS FIRST USED at Langemark, in Belgium, where a monument has been unveiled to mark the place, bearing an inscription recording its use by the Germans.

THE CHEMICAL CONSTRUCTION Co. of Charlotte, U.S.A., has secured the contract for the erection of a large superphosphate plant for the Sociedad Anonima Cros, Barcelona.

THREE LARGE ITALIAN RAYON FIRMS are reported to be planning a merging of interests. The firms are Snia Viscosa, Turin; La Soie de Chatillon, Milan; and Seta Artificiale Varedo A.S., Milan.

THE SPANISH IMPORT DUTY on calcium cyanamide will be reduced to a nominal figure by a Royal decree just signed by King Alfonso, following representations made by the leading Spanish agriculturists and by the principal Spanish chambers of agriculture.

MR. W. R. JEWELL, B.Sc., F.I.C., a graduate of the Universities of Sheffield and Melbourne and research chemist at the Commonwealth Cordite Factory, Maribyrnong, Victoria, has been appointed to the new post of research chemist to the Victorian Department of Agriculture at a salary of £700 a year.

MR. H. H. BERRESFORD has been appointed a director of Markham and Co., Broad Oaks Ironworks, Chesterfield, one of the subsidiary companies of the Staveley Coal and Iron Co.; he has also been promoted from the position of assistant general manager of the Staveley Co. to general manager, in succession to Mr. A. Westlake, who recently resigned.

DAMAGE ESTIMATED AT £200 was caused by a fire which broke out on Thursday, August 27, at the works of William Briggs and Sons, Ltd., chemical and asphalt manufacturers, of Elliot, near Arbroath. A boiler containing bitumen caught fire, but the prompt application of chemical fluid of the firm's own manufacture mastered the flames and prevented further damage being done.

AN ACCIDENT OCCURRED AT THE CROWN CHEMICAL WORKS, Mitcham, recently, whilst three employees were cleaning out a boiler. One of the men was taking his turn inside the boiler when the steam was turned on by mistake. Whilst struggling to escape he fell into the firebox, and on being rescued was taken to Croydon General Hospital in a precarious condition.

THE PRIVY COUNCIL gave notice on Tuesday, August 31, that, after the expiration of 40 days, it is proposed to submit to His Majesty in Council, in pursuance of the Petroleum Acts, 1871 to 1926, the draft of an Order in Council applying certain provisions of the Acts to bisulphide of carbon. Copies of the proposed draft Order can be obtained by any public body, within 40 days of the date of the notice, at the Privy Council Office, Whitehall.

SCOTTISH ARTIFICIAL SILKS, LTD., is to be the name of a company which will be floated shortly to carry on the business of artificial silk spinners and manufacturers at Kirkcudbright. The company have acquired the Tongland works, adjacent to Kirkcudbright, for weaving, and also the Providence Mill at Hyde, Cheshire, for the spinning of the yarns required for its admixture fabrics. At the Tongland works about 600 people will be employed. The capital of the new company will approach half a million.

APPLICATIONS ARE INVITED for the following appointments:—Senior Metallurgist to the British Cast Iron Research Association. Not less than £800. The Director, 75, New Street, Birmingham, September 15.—Adviser in Agricultural Chemistry in the University of Durham (Armstrong College), Newcastle-upon-Tyne. £300 plus bonus. The Registrar, October 1.—Full-time teacher in the Chemistry Department of the Northern Polytechnic. Burnham Scale. The Clerk to the Governors, Northern Polytechnic, Holloway, London, N.7. September 6.—Research Bio-Chemist in the Walter and Eliza Hall Institute of Research, Melbourne, Australia. Two years. £750. The Agent-General for Victoria, Victoria House, Melbourne Place, Strand, London, W.C.2. September 30.

THE GRINDING AND PULVERISING OFFICES of International Combustion, Ltd., 11, Southampton Row, report the following sales:—For France: Repeat order for 7 ft. diameter by 36 in. cylinder Hardinge Conical Ball Mill for grinding lead zinc ore; repeat order for 5 ft. diameter by 22 in. cylinder Hardinge Conical Ball Mill for grinding lead zinc ore; one 4 ft. 6 in. Hardinge Mill for the wet grinding of ochre; one 5 ft. diameter by 22 in. cylinder Hardinge Conical Ball Mill for grinding lead ore; two Super High Side Raymond Mills for grinding coal; repeat order for one 5-roller High Side Raymond Mill for grinding coal; repeat order for 3-roller High Side Raymond Mill for grinding coal; one No. 0000 Pulveriser for disintegrating marine blue; one No. 0000 Raymond Pulveriser for disintegrating ochre; one No. 00 Pulveriser with 8L Fan, for magnesite; one 4 ft., Type 39, Hum-mer Electric Screen, for screening lead zinc ore. For England: One 3 ft., 3 surface, Type 31, Hum-mer Electric Screen for screening cotton waste.

KRUPPS OF ESSEN announce that no dividend can be declared for 1925–26, as the year's working shows a loss of 15,000,000 marks.

MR. P. H. V. FITZGERALD, aged 23, son of Mr. F. W. V. Fitzgerald, consulting chemist, was drowned recently in a canoe accident on the Thames.

MAJOR SIR ASTON COOPER-KEY, who recently retired from the position of H.M. Inspector of Explosives, has been elected to the board of Allen-Liversidge, Ltd.

A SYNTHETIC NITROGEN PLANT is being erected at Marienbergen, in Czecho-Slovakia. The Claude process will probably be used. The daily production will be 15 metric tons at the beginning, gradually increasing to 22½ tons, and finally to 30 tons.

FIVE NEW SUGAR BEET FACTORIES, it is stated, are nearing completion and during the next few months will be ready to take their share of the beet crop. The completion of these factories will make a total of 12 in Great Britain, 11 of which are post-war.

THE BRITISH MANNESMANN TUBE CO., LTD., and Mannesmannvoehren-Werke A.G., have arrived at an arrangement whereby, it is stated, the two companies will bring about an interchange of technical information and assistance with general co-operation.

DR. A. E. DUNSTAN will read a paper on "Liquid Fuels" at the first meeting of the 1926 winter session of the Institution of Fuel Economy Engineers, to be held in the lecture theatre of the Royal Society of Arts, John Street, Adelphi, London, on September 24, at 6 p.m. Sir Alfred Mond has accepted an invitation to become first president of the Institution.

THE I.G. FARBENINDUSTRIE A.-G. shareholders, at an extraordinary general meeting, held on Wednesday, agreed to the suggested increase in capital from 646 million marks to 1,100 million marks, in regard to which a statement appeared recently in THE CHEMICAL AGE. Particular attention will be paid to the development of the trust's schemes for oil production.

CANADIAN CHEMISTS, at a meeting recently held, considered the question of forming a Canadian Chemical Society. A motion was ultimately passed, calling for the appointment of a committee, consisting of officers of all the organised chemical groups in Canada to consider "means of unification of Chemical Society activities, and report to the next Dominion Convention."

A FIRE BROKE OUT on Monday at the Garscube Chemical Works, adjoining the Dawsholm Gasworks, Maryhill, Glasgow. Four iron tanks, containing approximately 90 tons of liquid tar were involved and the damage is estimated at £1,000. The outbreak was discovered in its early stages by a stillman employed by the company—Henry Ellison, Ltd.—who promptly summoned the fire brigade.

THE SEVENTH INTERNATIONAL EXHIBITION of Rubber, Other Tropical Products and Allied Industries will be held in Paris at the Grand Palais from January 21 to February 6, 1927. The Exhibition, which has the official support and active collaboration of various rubber, cotton and other influential associations, includes the following: chemicals and chemical manures; scientific apparatus; soap; wood pulp; minerals; and exhibits and statistics, etc., illustrating the work of experimental stations, laboratories and technical schools.

RECENT WILLS INCLUDE: Mr. Henry Edward Ayre, of Mickleover, Derbyshire, colour manufacturer, managing director of Joseph Mason and Co., Ltd., £58,279.—Mr. Henry Mathison Beusive, of Neston, a director of the Anglo-Chilian Nitrate and Railway Co. and other companies, £548,738.—Mr. Joseph Latham, of Mitcham, varnish manufacturer, £10,701.—Mr. Josiah Wycliffe Kynaston, of Fairfield, Liverpool, manufacturing chemist, £9,544.—Mr. Henry Ripley, J.P., of East Bournemouth, a director of the Bradford Dyers' Association, £152,525.

A FINE OF £15 WITH 3 GUINEAS COSTS was imposed upon the Retail Dairy Co., of Bristol, at Old Street Police Court, on Tuesday, August 24, for selling cream containing 0·35 per cent. of boric acid. Mr. Hornby, prosecuting for the Bethnal Green Borough Council, said that the inspector's assistant went to the firm's branch shop in Globe Road, Bethnal Green, and asked for fresh cream. She handed in a saucer, but was supplied with the cream in a cardboard cup, and it proved to be preserved cream. Mr. Clarke Hall said that the accumulation of boric acid in every article of food was thought to have a very bad effect, and a law was passed to prevent that sort of thing. If people chose to buy boric acid they could do it, but not without knowledge.

Obituary

DR. J. A. CHOPIN, in Montreal. For ten years he was chief chemist to the Provincial Bureau of Hygiene.

MR. A. B. BAYLIS, of Morthen, near Rotherham, chairman and managing director of the Midland Iron Co., Ltd., Rotherham.

MR. WILLIAM JAMIESON, the first general manager and for many years a director of the Broken Hill Proprietary Co., Melbourne, aged 74.

DR. C. POMERANZ, in Vienna, aged 66. He was head of the teaching council for experimental and agricultural chemistry in the School of Soil Culture.

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The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

255,919. DISTILLING TAR. W. B. Davidson, 12, Akenside Hill, A. C. Michie, 12, Akenside Hill, and E. W. Muddiman, 45, Grantham Road, Jesmond, all in Newcastle-on-Tyne. Application date, April 1, 1925.

The froth produced during the dehydration or distillation of tar or the like is broken up by causing it to come into contact with a surface heated by a fluid which subsequently serves for heating the tar, etc. Thus steam may be passed through a bank of tubes fixed in the free space above the tar and then through tubes immersed in the tar. When frothing occurs it is broken up by the upper set of tubes, heat being at the same time abstracted from them; less heat thus reaches the tar from the lower set of tubes and the rate of distillation is automatically reduced until frothing subsides. The method is particularly advantageous when dehydrating low temperature tar.

255,963. EXOTHERMIC CATALYTIC REACTIONS, PROCESS FOR EFFECTING. Synthetic Ammonia and Nitrates, Ltd., and H. A. Humphrey, Billingham, Stockton-on-Tees. Application date, May 4, 1925.

In carrying out exothermic catalytic reactions between gases the direction of the gas flow through the catalyst chamber is periodically reversed relative to the catalyst. A more even temperature throughout the mass of the catalyst is thereby maintained, and local heating with consequent loss of efficiency avoided. The more frequent the reversals the more uniform will be the temperature of the catalyst. The known methods of maintaining uniformity of temperature, such as introducing cold gases at the overheated parts, or mixing cold gases with the entering gases, may be simultaneously applied.

255,971. ARSONOPHENYL-AMINO ALCOHOLS, PROCESS FOR PRODUCING. E. C. R. Marks, London. From Abbott Laboratories, Chicago, U.S.A. Application date, May 6, 1925.

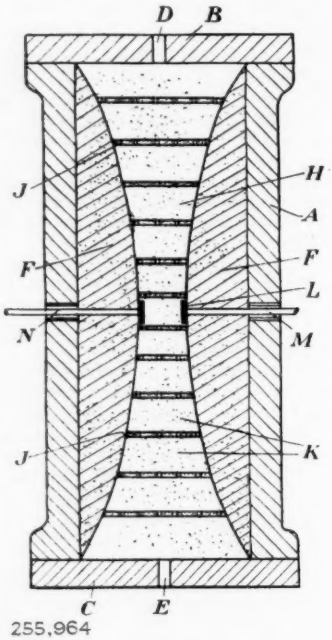
The process consists in condensing arsanilic acid, or a substitution derivative thereof, with an ω-chloralkyl-chlorcarbonate and then further treating the ω-chloralkyl-arsonophenyl carbamate with alkali in order to replace the ω-chlorine atom by hydroxyl and eliminate carbon dioxide. When starting with *p*-arsanilic acid and chlorethyl-chlorcarbonate the reaction takes place according to the scheme:—

$$H_2O_3As.C_6H_4.NH_2 + Cl.COO.CH_2.CH_2Cl \rightarrow H_2O_3As.C_6H_4.NH.COO.CH_2.CH_2.Cl \xrightarrow{NaOH} H_2O_3As.C_6H_4.NH.CH_2CH_2.OH + CO_2$$

Examples are given of the production of (1) *o*- or *p*-arsonophenyl-amincethanol from *o*- or *p*-arsanilic acid and β-chlorethyl-chlorcarbonate; (2) *o*- or *p*-arsonophenyl-aminopropanol from *p*-arsanilic acid and γ-chlorpropyl-chlorcarbonate; (3) arsonophenyl-4-methyl-3-aminoethanol from 4-methyl-3-aminophenylarsonic acid and β-chlorethyl-chlorcarbonate. The products are useful in the treatment of syphilis. The ω-chloralkyl-chlorcarbonates may be obtained by the interaction of alkylenechlorhydrins and phosgene.

255,964. EXOTHERMIC CATALYTIC REACTIONS, PROCESS FOR EFFECTING. Synthetic Ammonia and Nitrates, Ltd., and R. E. Slade, Billingham, Stockton-on-Tees. Application date, May 4, 1925.

In carrying out exothermic catalytic reactions between gases in which it is necessary to transfer much of the heat of reaction to the incoming gases to ensure the continuance of the reaction, the use of a separate heat interchanger is avoided. This is effected by passing the cold gases through a body of catalyst containing available heat, then through the reaction zone and finally through a further body of catalyst to which the hot gases lose their heat. The position of the hot zone is thus caused to travel through the catalyst mass and when it has reached the end the direction of gas flow is reversed to cause the position of the hot zone to travel back once more. The method is particularly applicable to the synthesis of ammonia from nitrogen and hydrogen at a pressure of about 200 atmospheres. The figure shows a suitable form of catalytic furnace. A cylindrical pressure resisting vessel A has a lining of heat insulating material F, preferably thicker near the centre than at the ends, and is divided by perforated heat



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insulating partitions J into compartments H which contain the catalyst. An electric heating coil L is provided at the centre of the chamber for starting the reaction. The heat insulating partitions are essential when working with metallic catalysts, otherwise heat is conducted away too rapidly. If necessary, means may be furnished for removing some of the heat produced, such as cooling pipes within the apparatus and near to the end covers.

256,059. INTERMEDIATES OF THE BENZANTHRONE SERIES, MANUFACTURE AND PRODUCTION OF. J. Y. Johnson, London. From the Badische Anilin and Soda Fabrik, Ludwigshafen-on-Rhine, Germany, and the Farbwerke vorm. Meister, Lucius, and Brüning, Höchst, Germany. Application date, August 14, 1925. Samples furnished.

Sulphur derivatives of benzanthrone are prepared by acting on halogen-benzanthrones with inorganic sulphides or arylmercaptans, or by acting on nitro-, or halogen-nitro-benzanthrones with sulphur or arylmercaptans. When benzanthronyl-disulphide is produced it may be converted into benzanthronyl-sulphide by heating with copper, or a phenol or an arylamine; benzanthronyl-mercaptans can also be converted into benzanthronylsulphides by heating either alone or in presence of diluents. The production of the following compounds is described in examples:—(1) Bz1-benzanthronemercaptan from brombenzanthrone and sodium sulphide; (2) benzanthrone-Bz1- or 2-*p*-thiocresylether from Bz1- or 2-chlorbenzanthrone and *p*-thiocresol; (3) Bz1 : Bz1[1]-benzanthronyl-sulphide from a mixture of Bz1-brombenzanthrone or Bz1-nitrobenzanthrone and Bz1-benzanthronemercaptan; (4) a mixture of the mercaptan and the sulphide by heating Bz1-nitrobenzanthrone with sulphur.

256,068. HYDROXY-CHLOR-ANTHRAQUINONE, MANUFACTURE AND PRODUCTION OF. H. Dodd, W. C. Sprent, and the United Alkali Co., Ltd., Cunard Building, Liverpool.

It is known that a dihydroxyanthraquinone can be obtained by condensing *p*-chlorphenol with phthalic anhydride in the presence of sulphuric and boric acids; it is also known that the *p*-chlorphenol can be replaced by *o*-chlorphenol, as in specification 245,584 (see THE CHEMICAL AGE, Vol. XIV, page 160). It is now found that a hydroxy-chlor-anthraquinone containing the theoretical amount of chlorine can be obtained by condensing phthalic anhydride with *o*- or *p*-chlorphenol in sulphuric acid in the absence of boric acid, providing that the reaction temperature does not exceed appreciably 200° C.; the chlorine is not replaced by hydroxyl under these conditions.

256,080. SULPHUR BURNERS. E. C. R. Marks, London. From the Grasselli Chemical Co., Cleveland, Ohio, U.S.A. Application date, September 29, 1925.

A sulphur burner for the production of sulphur dioxide is completely enclosed in an air-tight receptacle, having inlet pipes for air and molten sulphur, and an outlet for the combustion gases, so that it may be operated at superatmospheric pressure. The invention is particularly applicable to rotating burners of the "Glen Falls" type, since leakage at the joints between the rotating and fixed parts becomes of little moment. The sulphur dioxide-containing gases may be delivered directly to a sulphuric acid plant, etc., without the intervention of a further pump or blower.

256,094. REDUCING SOLID BODIES TO A FINE STATE OF DIVISION, METHOD AND APPARATUS FOR. S. G. S. Dicker, London, from the Oderberger Chemische Werke, Akt.-Ges., Oderberg, Czecho-Slovakia. Application date, October 30, 1925.

It is known that the quick-running "wet mills" give excellent results in the preparation of colloidal solutions from solids, but that a considerable amount of power is wasted in friction between the material and sides of the mill. It is now found that much of this loss can be avoided by feeding the material at a relatively low speed past a high-speed disintegrating device so that it is acted upon temporarily by the beaters, but not carried round thereby. In the apparatus described a pump draws the material from a tank and sends it tangentially past the moving beaters of the mill and thence back to the tank; the material is thus circulated until sufficiently reduced, though the apparatus may also be worked in a continuous manner. The method is stated to be applicable to the grinding of ores, graphite, colours, etc., and to the preparation of emulsions and colloidal solutions.

256,137. DI-AMMONIUM PHOSPHATE, MANUFACTURE AND PRODUCTION OF. J. Y. Johnson, London. From the I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, February 22, 1926.

The production of di-ammonium phosphate, free from other ammonium phosphates, from ammonia and phosphoric acid is effected by maintaining the components in the ratio of 1·5 to 2 molecules of ammonia to each molecule of phosphoric acid. When the desired quantities of components have reacted the solution is concentrated if necessary, cooled, and treated with ammonia until it contains two molecules of ammonia to each molecule of phosphoric acid, whereupon di-ammonium phosphate separates. The reaction may be carried out continuously, the solution being removed continuously or at intervals, treated with ammonia, and crystallised. The heat of the reaction is in general sufficient to cause evaporation of the necessary amount of water, though if dilute solutions are used it is necessary to supply heat. The process avoids loss of ammonia such as occurs in evaporating solutions of di-ammonium phosphate, and impurities such as iron and aluminium phosphates may be removed by simple filtration prior to the final neutralisation. The product is especially suitable as a fertiliser.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention:—243,739 (Soc. of Chemical Industry in Basle), relating to sulphur dyestuffs, see Vol. XIV, p. 137; 247,940 (P. I. Schestakoff), relating to the manufacture of sulphonic acids, see Vol. XIV, p. 444.

International Specifications not yet Accepted

253,911. CYCLIC HYDROCARBONS. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. (Assignees of Farbwerke vorm. Meister, Lucius, and Brüning, Hoechst-on-Main, Germany.) International Convention date, June 22, 1925. Addition to 251,270.

Specification 251,270 (see THE CHEMICAL AGE, Vol. XV, p. 59) describes the production of cyclic hydrocarbons by passing the vapours of diaryl ketones or aryl-alkyl-ketones containing a methyl group or a methylene group in the *o*-position to the carbonyl group, over silica gel, alumina gel, or active charcoal. Several modifications of this process are described, and examples are given of the production of (1) β-methyl-anthracene from *m*-xylyl-phenyl-carbinol, or its acetate and air in the presence of a special active charcoal, (2) 1 : 4 : 2-trimethyl-anthracene from di-*p*-xylylcarbinol and air, (3) 1 : 3-dimethyl-7 : 8-benzanthracene from the carbinol obtained by reducing α-naphthoyl-mesitylene, (4) an acenaphanthracene from the carbinol made by reducing 5-(*o*-toluoyl)-acenaphthene, (5) 1 : 2 : 7 : 8-dibenzanthracene from the carbinol made by reducing α-naphthoyl-2-methyl-naphthalene, (6) β-methyl-anthracene from *m*-xylyl-phenylmethane.

253,950. NITRILES. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. (Assignees of Farbwerke vorm. Meister, Lucius, and Brüning, Hoechst-on-Main, Germany.) International Convention date, June 22, 1925.

Alkylated or aralkylated nitriles, *e.g.*, diethylallyl-acetonitrile are obtained by acting on an aliphatic nitrile, *e.g.*, diethyl-acetonitrile with an alkali metal, with or without ether, benzene or xylene, and then treating with an alkylating or aralkylating agent, *e.g.*, allyl bromide. The acid amide is obtained by saponification.

254,262. DECOLOURISING CARBON. E. Urbain, 6, Rue Lyautey, Paris. International Convention date, June 25, 1925. Addition to 249,138.

Decolourising carbon is prepared by carbonising a mixture of a substance of vegetable origin, tri-calcium phosphate, and phosphoric acid. Bones, either fresh or deprived of organic matter, may serve to supply the tri-calcium phosphate.

254,287. EXTRACTING LIGHT OILS FROM GASES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. (Assignees of Akt.-Ges. für Anilin Fabrikation, Treptow, Berlin.) International Convention date, June 25, 1925.

The fractions of mineral oils which have been extracted from the said oils by means of liquid sulphur dioxide are used for washing light oils out of coal gas or other gas.

254,294. BENZANTHRONE DERIVATIVES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. (Assignees of Farbwerke vorm. Meister, Lucius, and Brüning, Höchst-on-Main, Germany.) International Convention date, June 27, 1925.

Products which are probably amino-benzanthrone sulphonic acids are obtained by treating nitrobenzanthrones with alkali metal sulphites; they dye wool, silk, and acetate silk in red shades. An example is given according to which Bz1-nitrobenzanthrone is boiled with sodium bisulphite, and the sulphonic acid salted out after acidifying.

254,303. PRESERVING OILS AND FATS. A. Rechberg Ges., G. Braun Ges., and H. Oestermann, Hersfeld, Hessen-Nassau, Germany. International Convention date, June 24, 1925.

Catalyst poisons are added to fats, oils, and fatty acids in order to prevent autoxidation thereof. As an example ·4 gram of sulphur or ·25 gram of pyrogallol may be added to 40 grams of oleic acid to be used for greasing wool.

254,310. PERYLENE DERIVATIVES. F. Bensa, 25, Piazza Fontane Marosse, Genoa, Italy. (Assignee of A. Pongratz, 25, Lessingstrasse, Graz, Austria.) International Convention date, June 26, 1925.

Halogen derivatives of perylene are heated with metal cyanides in the presence or absence of solvents and with or without pressure in order to obtain the corresponding nitriles. According to examples (1) a dicyanoperylene is obtained by heating dichloroperylene with cuprous cyanide, removing most of the copper by extraction with ammonia and extracting with nitrobenzene, (2) monochlorperylenenitrile is obtained by boiling dichloroperylene with cuprous cyanide and quinoline under a reflux condenser, and recrystallising the product from

nitrobenzene. When pyridine or quinoline are used the reaction may be effected under pressure.

LATEST NOTIFICATIONS.

257,256. Manufacture of valuable liquid products from carbonaceous materials. I.G. Farbenindustrie Akt.-Ges. August 20, 1925.

257,258. Manufacture and production of solutions of organic compounds. I.G. Farbenindustrie Akt.-Ges. August 21, 1925.

257,259. Method of producing titanic acid unaffected by light. Deutsche Gasgluhlicht-Auer-Ges. August 20, 1925.

257,270. Purification of hydrogenation products of carbonaceous materials. I.G. Farbenindustrie Akt.-Ges. August 20, 1925.

257,275. Process for the manufacture of esters of isoborneol and borneol. Chemische Fabrik auf Actien (vorm. E. Schering). April 11, 1925.

Specifications Accepted with Date of Application

241,224. Dissociating metal alloys. M. Meyer and L. Meyer. October 11, 1924.

242,990. Calcium nitrate capable of being strewn, Process for preparing. Farbwerke vorm. Meister, Lucius, und Brüning. November 11, 1924.

244,450. Arylido-anthraquinone derivatives, Manufacture of. Farbwerke vorm. Meister, Lucius, und Brüning. December 12, 1924.

248,750. Artificial products from viscose, Manufacture of. British Enka Artificial Silk Co., Ltd. March 5, 1925.

256,654. Prevention of rancidity in vegetable oils used as ingredients of plastic compositions for coating fabrics, paper, and the like. G. E. Scharf and Nobel's Explosives Co., Ltd. February 6, 1925.

256,663 and 256,664. Acetic anhydride, Manufacture of. H. Dreyfus. April 9, 1925.

256,687. Process of burning limestone. J. K. Kiddle. May 12, 1925.

256,711. Synthetic resin product. W. F. Fleet, H. V. Potter, and Damard Lacquer Co., Ltd. May 15, 1925.

256,734. Titanium oxide, Manufacture of. P. A. Mackay. May 28, 1925.

256,747. Non-detergent substances used in dressing, finishing, and laundering textile fabrics, and the production thereof in an improved form. W. Acton. June 23, 1925.

256,757. Process of treating fibrous vegetable materials for the production of cellulose. Chemische Fabrik Griesheim-Elektron and H. Wenzl. July 7, 1925.

256,775. New aminotriarylmethanes and azo dyestuffs derived therefrom, Manufacture of. British Dyestuffs Corporation, Ltd., and K. H. Saunders. August 4, 1925.

256,790. Fire and acid-proof plastic substances. A. Wolfsholz. August 24, 1925.

256,808 and 256,809. Azo-dyestuffs, Manufacture of. A. G. Bloxam (*Chemische Fabrik Griesheim-Elektron*). September 23, 1925.

256,836. Process for the treatment of ores for the recovery of titanium. A. W. Gregory. November 30, 1925.

256,838. Method of briquetting ore concentrates, especially concentrates of iron ore. V. C. Ostlund. October 14, 1925.

256,845. Continuous carbonisation and cracking of bituminous materials under pressure. K. Bube. December 22, 1925.

256,861. Rotary furnace. F. E. Enke. January 30, 1926.

Applications for Patents

Abbott Laboratories, and Marks, E. C. R. Arseno bismuth compounds, etc. 21,068. August 26.

Beghin, P., British Alizarine Co., Ltd., and Dawson, W. H. Production of dyestuffs from indanthrene. 20,992. August 26.

Bellwood, R. A., and Downs, C. Extraction of oil from vegetable seeds, etc. 20,754. August 23.

British Dyestuffs Corporation, Ltd., Chapman, E., and Hollins, C. Retting flax, etc. 20,855. August 24.

British Dyestuffs Corporation, Ltd., Chapman, E., and Hollins, C. Manufacture of decolourising agents, etc. 20,856. August 24.

British Dyestuffs Corporation, Ltd., Shepherdson, A., and Thornley, S. Manufacture of black and grey vat dyes. 20,857. August 24.

British Dyestuffs Corporation, Ltd., Everatt, R. W., and Rodd, E. H. Preparation of aromatic amines, etc. 20,956. August 25.

British Dyestuffs Corporation, Ltd., Shepherdson, A., and Thornley, S. Manufacture of vat dyes. 21,074. August 26.

British Dyestuffs Corporation, Ltd., Champan, E., and Shepherdson, A. Manufacture of water paints. 21,075. August 26.

Consortium für Electrochemische Industrie Ges. Manufacture of acetals. 21,196. August 27. (Germany, August 27, 1925.)

Demann, W. Method of purifying resin-containing acid. 20,971. August 25. (Germany, September 9, 1925.)

I.G. Farbenindustrie Akt.-Ges. Manufacture of vat dyestuffs. 21,065. August 26. (Germany, August 26, 1925.)

I.G. Farbenindustrie Akt.-Ges. Process for introducing sulphocyanide groups into organic compounds. 21,070. August 26. (Germany, August 27, 1925.)

I.G. Farbenindustrie Akt.-Ges. Process for protecting wool from bacteria. 21,192. August 27. (Germany, November 10, 1925.)

May and Baker, Ltd., and Phillips, M. A. Manufacture of acyl derivatives of dihydroxy diamino-arsenobenzene. 21,264. August 28.

Namlooze Vennootschap Philips' Gloeilampenfabrieken. Process of separating hafnium and zirconium. 21,086. August 26. (Holland, September 12, 1925.)

Newbery, G. Manufacture of acyl derivatives of dihydroxy diamino-arsenobenzene. 21,264. August 28.

Norris, G. C., Stevens, R. H., and Watson, W. N. Purification of zinc sulphate solutions. 20,784. August 23.

Norris, G. C., Stevens, R. H., and Watson, W. N. Removal of silica, etc., from metal-bearing solutions. 20,785. August 23.

Norris, G. C., Stevens, R. H., and Watson, W. N. Extraction of zinc and vanadium. 20,786, 20,788, 20,789. August 23.

Norris, G. C., Stevens, R. H., and Watson, W. N. Removal of phosphorus from metal-bearing solutions. 20,787. August 23.

"To-day and To-morrow"

By Henry Ford and Samuel Crowther

THE jaded industrialist, his mind oppressed with all the bemuddled sophistications which pass with us for political economy, who wants a refresher, should read this book (Doubleday, Page and Co., New York, $3.50). Here are 270 pages of serious discussion of industrial problems and nowhere in them is to be found the blessed word, "Committee." Here is the largest employer of labour in the world, entirely free from trade union pressure and comparatively free from legislative interference, writing a whole book to argue that wages must be higher. The motive of industry must be the "wage-motive," but, "of course, if men are under some outside influence or control by which the amount of work which they do in a day is limited—if they have to answer to an outside authority, then management is impossible, and consequently high wages cannot be paid for the production of low-priced products. The whole wage-motive fails."

Ford, unlike most of us, looks at the industrial picture the right way up. He realises that wages come out of production and that there is nowhere else whence they can come. He makes the customer the first consideration, another way of expressing the same idea, and works it all out in this simple but original way:—

"The public and only the public can make a business. If we have good steel to-day, it is because the public bought steel when it was faulty, and thus helped the steel masters to perfect their science and production. Since the public makes a business, the primary obligation of business is to the public. Suppose an industry, through efficiency and approved service, is able to reduce costs to the consumer. It gives the benefits of its improvements to its customers. If an article costs a dollar less to produce than formerly, a dollar comes off the price charged the customer. By that process more people are able to buy. More buyers make a still larger business. A larger business still further reduces costs, which in turn increases the business still more. Now, it is obvious that, however efficient the idea of economical production in that factory may have been, no such growth would have followed had the economy not been shared with the public. Suppose that the one dollar saved was added to profits, the price to the consumer remaining the same. There would have been no change in the volume of business. Suppose the dollar saved had been added to wages, there would have been no change in the volume of business. By starting at the right end prices go down, which is to say that, to the public, values go up, wages go up, and surplus goes up."

The point for us to remember is that Ford only expresses the commonly accepted view of a hundred and ten million Americans, which is the whole explanation of the wealth of that progressive place. The worker, like everybody else, wants "good food, good clothing, good housing, and a reasonable amount of pleasure both for himself and for his family. He cannot get these things by any political device or through any bargaining organisation, such as a labour union, for goods are created neither by law nor by bargaining—which, strangely enough, does not seem generally to be recognised."

One could quote indefinitely from this timely and welcome volume. Mr. Ford appears to be looking for an English sale and he will not be disappointed. We need more of the industrial literature of America on this side of the Atlantic. It might be made popular with us if it were offered as a holiday from our way of thinking. E. J. P. B.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £37 per ton, Powder, £39 per ton.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.

ACID NITRIC, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BISULPHITE OF LIME.—£7 10s. per ton, packages extra, returnable.

BLEACHING POWDER.—Spot, £9 10s. d/d; Contract, £8 10s. d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystal, £23 per ton. Powder, £24 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)

CALCIUM CHLORATE (SOLID).—£5 12s. 6d. to £5 17s. 6d. per ton d/d carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 64 O.P.—Industrial, 2s. 5d. to 2s. 11d. per gall. Mineralised, 3s. 8d. to 4s. per gall., in each case according to quantity.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3½d. per lb., ex wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER 60/62%.—£17 per ton for home market, 1-cwt. iron drums included.

SODIUM CHLORATE.—3d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.r. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.r. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—4½d. to 5d. per lb. Crude 60's, 1s. 4d. to 1s. 5d.

ACID CRESYLIC 97/99.—2s. to 2s. 2d. per gall. Pale, 95%, 1s. 10d. to 2s. per gall. Dark, 1s. 9d. to 1s. 10d. per gall. Steady.

ANTHRACENE.—A quality, 2½d. to 3d. per unit.

ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7½d. to 8d. per gall.

BENZOL.—Crude 65's, 1s. 4d. to 1s. 5d. per gall., ex works in tank wagons. Standard Motor, 2s. to 2s. 3d. per gall., ex works in tank wagons. Pure, 2s. 3d. to 3s. 3d. per gall., ex works in tank wagons.

TOLUOL.—90%, 2s. to 3s. per gall. Pure, 2s. 3d. to 3s. 3d. per gall.

XYLOL.—2s. 4d. to 3s. 6d. per gall. Pure, 4s. per gall.

CREOSOTE.—Cresylic, 20/24%, 10d. per gall. Standard specification, middle oil, 6½d. to 7¼d. per gall. Heavy, 7¼d. to 7¾d. per gall.

NAPHTHA.—Crude, 10d. to 1s. 1d. per gall. according to quality. Solvent 90/160, 2s. to 2s. 3d. per gall. Solvent 90/190, 1s. 3½d. to 1s. 6d. per gall.

NAPHTHALENE CRUDE.—Drained Creosote Salts, £3 10s. to £5 per ton. Whizzed or hot pressed, £5 10s. to £7 10s.

NAPHTHALENE.—Crystals and Flaked, £11 10s. to £13 per ton, according to districts.

PITCH.—Medium soft, 92s. 6d. to 100s. per ton.

PYRIDINE.—90/140, 17s. to 20s. per gall. Heavy, 7s. to 10s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated.

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. 6d. per lb. 100%.

ACID BENZOIC.—1s. 9d. per lb.

ACID GAMMA.—8s. per lb.

ACID H.—3s. 3d. per lb. 100% basis d/d.

ACID NAPHTHIONIC.—2s. 2d. per lb. 100% basis d/d.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb. 100% basis d/d.

ACID SULPHANILIC.—9d. per lb. 100% basis d/d.

ANILINE OIL.—9½d. per lb. naked at works.

ANILINE SALTS.—9½d. to 7½d. per lb. naked at works.

BENZALDEHYDE.—2s. 1d. per lb.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

o-CRESOL 29/31° C.—3d. to 3½d. per lb.

m-CRESOL 98/100%.—2s. 1d. to 2s. 3d. per lb.

p-CRESOL 32/34° C.—2s. 1d. to 2s. 3d. per lb.

DICHLORANILINE.—2s. 3d. per lb.

DIMETHYLANILINE.—1s. 11d. to 2s. per lb. d/d. Drums extra.

DINITROBENZENE.—9d. per lb. naked at works.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C., 9d. per lb. naked at works.

DIPHENYLANILINE.—2s. 10d. per lb. d/d.

a-NAPHTHOL.—2s. per lb. d/d.

B-NAPHTHOL.—11d. to 1s. per lb. d/d.

a-NAPHTHYLAMINE.—1s. 3d. per lb. d/d.

B-NAPHTHYLAMINE.—3s. 2d. per lb. d/d.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. 3d. per lb. d/d.

p-NITRANILINE.—1s. 9d. per lb. d/d.

NITROBENZENE.—7d. per lb. naked at works.

NITRONAPHTHALENE.—10d. per lb. d/d.

R. SALT.—2s. 4d. per lb. 100% basis d/d.

SODIUM NAPHTHIONATE.—1s. 9d. per lb. 100% basis d/d.

o-TOLUIDINE.—9d. per lb. naked at works.

p-TOLUIDINE.—2s. 2d. per lb. naked at works.

m-XYLIDINE ACETATE.—2s. 11d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £8. Grey, £17 10s. per ton. Liquor, 9d. per gall. 32° Tw.

CHARCOAL.—£7 to £9 per ton, according to grade and locality.

IRON LIQUOR.—1s. 6d. per gall. 32° Tw. 1s. 2d. per gall., 24° Tw.

RED LIQUOR.—9½d. to 1s. per gall.

WOOD CREOSOTE.—2s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 6d. per gall. 60% O.P. Solvent, 3s. 6d. per gall. 40% O.P.

WOOD TAR.—£3 to £5 per ton, according to grade.

BROWN SUGAR OF LEAD.—£39 to £40 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6d. to 1s. 5d. per lb., according to quality, Crimson, 1s. 3d. to 1s. 7½d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—2s. per lb.

BARYTES.—£3 10s. to £6 15s. per ton, according to quality.

CADMIUM SULPHIDE.—2s. 9d. per lb.

CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£46 to £55 per ton, according to quantity, drums extra.

CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.

DIPHENYLGUANIDINE.—3s. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5½d. to 6½d. per lb.

LAMP BLACK.—£35 per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPONE, 30%.—£22 10s. per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton f.o.r. London.

SULPHUR.—£9 to £11 per ton, according to quality.

SULPHUR CHLORIDE.—4d. per lb., carboys extra.

SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb. carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—5s. 3d. per lb.

ZINC SULPHIDE.—1s. 1d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, 80% B.P.—£39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 4d. to 2s. 6d. per lb. Brisk demand.

ACID, BENZOIC B.P.—2s. to 2s. 3d. per lb., according to quantity.

ACID, BORIC B.P.—Crystal, £43 per ton; Powder, £47 per ton. Carriage paid any station in Great Britain, in ton lots.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—1s. 3½d. to 1s. 4½d. per lb., less 5%.

ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.

ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d.

ACID, SALICYLIC.—1s. 3½d. to 1s. 5½d. per lb. Technical.—10½d. to 11d. per lb.

ACID, TANNIC B.P.—2s. 9d. to 2s. 11d. per lb.

ACID, TARTARIC.—1s. 0½d. per lb., less 5%. Market firm.

AMIDOL.—9s. per lb., d/d.

ACETANILIDE.—1s. 7d. to 1s. 8d. per lb. for quantities.

AMIDOPYRIN.—11s. 6d. per lb.

AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity.

AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks.

ATROPINE SULPHATE.—11s. per oz. for English make.

BARBITONE.—9s. per lb.

BENZONAPHTHOL.—3s. 3d. per lb. spot.

BISMUTH CARBONATE.—12s. 6d. to 14s. 3d. per lb.

BISMUTH CITRATE.—9s. 6d. to 11s. 3d. per lb.

BISMUTH SALICYLATE.—10s. 3d. to 12s. per lb.

BISMUTH SUBNITRATE.—10s. 9d. to 12s. 6d. per lb. according to quantity.

BORAX B.P.—Crystal, £27; Powder, £28 per ton. Carriage paid any station in Great Britain, in ton lots.

BROMIDES.—Potassium, 1s. 8d. to 1s. 11d. per lb.; sodium, 1s. 10d. to 2s. 2d. per lb.; ammonium, 2s. 1d. to 2s. 5d. per lb., all spot.

CALCIUM LACTATE.—1s. 3d. to 1s. 5d.

CHLORAL HYDRATE.—3s. 3d. to 3s. 6d. per lb., duty paid.

CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.

CREOSOTE CARBONATE.—6s. per lb.

FORMALDEHYDE.—£39 per ton, in barrels ex wharf.

GUAIACOL CARBONATE.—7s. to 7s. 6d. per lb.

HEXAMINE.—2s. 4d. to 2s. 6d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 8d. per gallon f.o.r. makers' works, naked.

HYDROQUINONE.—4s. 3d. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.

IRON AMMONIUM CITRATE B.P.—2s. to 2s. 3d. per lb. Green, 2s. 4d. to 2s. 9d. per lb. U.S.P., 2s. 1d. to 2s. 4d. per lb.

IRON PERCHLORIDE.—20s. to 22s., according to quantity.

MAGNESIUM CARBONATE.—Light Commercial, £31 per ton net.

MAGNESIUM OXIDE.—Light Commercial, £67 10s. per ton, less 2½%, price reduced; Heavy Commercial, £22 per ton, less 2½%; Heavy Pure, 2s. to 2s. 3d. per lb., according to quantity.

MENTHOL.—A.B.R. recrystallised B.P., 19s. 9d. net per lb., Synthetic, 11s. to 12s. per lb., according to quality.

MERCURIALS.—Red oxide, 5s. 11d. to 6s. 1d. per lb.; Corrosive sublimate, 4s. 3d. to 4s. 5d. per lb.; white precipitate, 4s. 9d. to 4s. 11d. per lb.; Calomel, 4s. 6d. to 4s. 8d. per lb.

METHYL SALICYLATE.—1s. 4d. to 1s. 7d. per lb.

METHYL SULPHONAL.—16s. 6d. per lb.

METOL.—11s. per lb. British make.

PARAFORMALDEHYDE.—1s. 9d. for 100% powder.

PARALDEHYDE.—1s. 2d. to 1s. 4d. per lb.

PHENACETIN.—3s. 9d. to 4s. per lb.

PHENALONE.—5s. 9d. to 6s. per lb.

PHENOLPHTHALEIN.—4s. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—81s. per cwt., less 2½% for ton lots.

POTASSIUM CITRATE.—1s. 11d. to 2s. 2d. per lb.

POTASSIUM FERRICYANIDE.—1s. 9d. per lb. in cwt. lots. Quiet.

POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.

POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 6½d. per lb., spot.

QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., in 100 oz. tins.

RESORCIN.—4s. 3d. to 4s. 9d. per lb., spot.

SACCHARIN.—55s. per lb.

SALOL.—3s. per lb.

SODIUM BENZOATE, B.P.—1s. 10d. to 2s. 2d. per lb.

SODIUM CITRATE, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb., B.P.C., 1923. 1s. 11d. to 2s. 2d. per lb., according to quantity.

SODIUM FERROCYANIDE.—4d. per lb. carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 5s. per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—75s. to 80s. per cwt., according to quantity.

SODIUM SALICYLATE.—Powder, 1s. 9d. to 1s. 10d. per lb. Crystal, 1s. 10d. to 1s. 11d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.

SODIUM SULPHITE, ANHYDROUS, £27 10s. to £28 10s. per ton, according to quantity; 1-cwt. kegs included.

SULPHONAL.—10s. 6d. per lb.

TARTAR EMETIC, B.P.—Crystal or Powder, 1s. 11d. to 2s. per lb.

THYMOL.—11s. to 13s. 9d. per lb.

Perfumery Chemicals

ACETOPHENONE.—10s. per lb.

AUBEPINE (EX ANETHOL).—10s. 9d. per lb.

AMYL ACETATE.—2s. per lb.

AMYL BUTYRATE.—5s. 6d. per lb.

AMYL SALICYLATE.—3s. 3d. per lb.

ANETHOL (M.P. 21/22° C.).—6s. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. 1d. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—2s. 1d. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 7d. per lb.

BENZYL BENZOATE.—2s. 4d. per lb.

CINNAMIC ALDEHYDE NATURAL.—17s. 9d. per lb.

COUMARIN.—11s. 6d. per lb.

CITRONELLOL.—15s. per lb.

CITRAL.—9s. 6d. per lb.

ETHYL CINNAMATE.—10s. per lb.

ETHYL PHTHALATE.—3s. per lb.

EUGENOL.—10s. per lb.

GERANIOL (PALMAROSA).—19s. per lb.

GERANIOL.—6s. 3d. to 10s. 6d. per lb.

HELIOTROPINE.—5s. per lb.

ISO EUGENOL.—14s. 6d. per lb.

LINALOL.—12s. to 17s. per lb.

LINALYL ACETATE.—15s. to 18s. 6d. per lb.

METHYL ANTHRANILATE.—9s. 3d. per lb.

METHYL BENZOATE.—5s. per lb.

MUSK KETONE.—34s. per lb.

MUSK XYLOL.—8s. 3d. per lb.

NEROLIN.—3s. 9d. per lb.

PHENYL ETHYL ACETATE.—12s. per lb.

PHENYL ETHYL ALCOHOL.—9s. 9d. per lb.

RHODINOL.—28s. 6d. per lb.

SAFROL.—1s. 6d. per lb.

TERPINEOL.—1s. 6d. per lb.

VANILLIN.—20s. 6d. per lb.

Essential Oils

ALMOND OIL.—11s. 6d. per lb.

ANISE OIL.—3s. 3d. per lb.

BERGAMOT OIL.—27s. per lb.

BOURBON GERANIUM OIL.—13s. 3d. per lb.

CAMPHOR OIL.—67s. 6d. per cwt.

CANANGA OIL, JAVA.—20s. per lb.

CINNAMON OIL, LEAF.—6d. per oz.

CASSIA OIL, 80/85%.—9s. 3d. per lb.

CITRONELLA OIL.—Java, 85/90%, 2s. 7d. Ceylon, 2s. per lb.

CLOVE OIL.—6s. 3d. per lb.

EUCALYPTUS OIL, 70/75%.—2s. per lb.

LAVENDER OIL.—French 38/40%, Esters, 18s. 6d. per lb.

LEMON OIL.—9s. per lb.

LEMONGRASS OIL.—4s. 6d. per lb.

ORANGE OIL, SWEET.—10s. 3d. per lb.

OTTO OF ROSE OIL.—Bulgarian, 70s. per oz. Anatolian, 30s. per oz.

PALMA ROSA OIL.—9s. 9d. per lb.

PEPPERMINT OIL.—Wayne County, 57s. 6d. per lb. Japanese, 11s. 9d. per lb.

PETITGRAIN OIL.—9s. per lb.

SANDAL WOOD OIL.—Mysore, 26s. per lb. Australian, 17s. 3d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, September 2, 1926.

BUSINESS during the past week has been without special feature. Demand has been fairly good having regard to the circumstances and the feeling as to the future is rather more optimistic. With very few exceptions the market is firm. Export inquiry is rather better and is resulting in more business than of late.

General Chemicals

ACETONE remains an uncertain market. Inquiry is very limited and business is restricted to spot requirements.

ACID ACETIC is in good demand for both home trade and export. Price is unchanged.

ACID FORMIC is a quiet market, price firm and unchanged.

ACID LACTIC.—In fair demand, price unchanged at about £43 per ton for 50 per cent. by weight.

ACID OXALIC.—The market is lifeless and price remains steady at 3⅝d. per lb.

ACID TARTARIC.—Unchanged at 11¾d. per lb. Demand small.

ALUMINA SULPHATE.—With the approach of the buying season, more interest is being taken in this article. Prices seem to have touched bottom and any change is likely to be in an upward direction.

AMMONIA CHLORIDE is very quiet. The price of £19 10s. per ton can be shaded for quantities.

ARSENIC.—The market is dead, price nominally about £14 10s. per ton.

BARIUM CHLORIDE is in fair demand at £10 per ton.

COPPER SULPHATE.—The improvement has been maintained and a fair demand is in evidence.

EPSOM SALTS.—Unchanged.

FORMALDEHYDE is rather quiet but with the improvement in the raw material prices are firmer at about £41 per ton.

LEAD ACETATE.—Unchanged, white at about £46 10s. per ton, brown about £43 per ton.

METHYL ACETONE is firmer in price and a further advance seems likely.

METHYL ALCOHOL is firm in consequence of the American developments.

POTASSIUM CHLORATE is in good demand, price £31 10s. to £32 per ton.

POTASSIUM PERMANGANATE is in better inquiry, price unchanged.

POTASSIUM PRUSSIATE is quiet at 7d. per lb.

SODA ACETATE is in good demand at £20 10s. to £21 per ton.

SODA BICHROMATE is an active market. English makers' price unchanged at 3½d. per lb.

SODA HYPOSULPHITE.—The better tendency is maintained; several makers have already advanced their prices.

SODA NITRITE.—Unchanged at about £20 10s. per ton.

SODA PHOSPHATE.—Unchanged.

SODA PRUSSIATE is in slow demand and is about 3¾d. per lb.

SODA SULPHIDE.—Unchanged.

ZINC SULPHATE.—Unchanged.

Nitrogen Products

Export.—During the past week, the sulphate of ammonia position remained unchanged. British producers are selling small lots at the ports as they become available on the basis of £10 15s. per ton f.o.b. There have been no reports recently of any large continental sales.

Home.—Merchants in various parts of the country are covering their requirements for the season. This is a direct consequence of the announcement of prices by the British producers. It is understood that fertiliser mixers have placed large orders for early delivery. The lower prices at which sulphate is being offered this year are stimulating the demand, especially as the change in nitrate of soda prices is very small.

Nitrate of Soda.—The market continues flat. As expectations from every side portend a further decrease in consumption of nitrate of soda, merchants are careful to cover only their minimum requirements. No doubt the end of the year will witness a revival of demand, because when that time is reached the consumers' demand will necessitate merchants having the goods ready.

Calcium Cyanamide

THERE is a limited inquiry for this material for autumn application and also from manufacturers for mixing purposes. The September price is £9 4s. for 4 ton lots, carriage paid to any railway station in Great Britain.

Action of Sugar on Concrete

Two recent cases of failure of concrete in Egyptian districts where sugar is plentiful have led to the carrying out of experiments with a view to ascertaining the action of sugar on cement mortar. It was found that in the presence of sugar the concrete set very slowly and produced a mass which was very soft, containing dangerous cracks, and quite unfit for service. One case of failure was due to the weakness of one small pillar in a large concrete building in a sugar works, in which all other parts were quite sound. It is known that sugar combines with lime to form saccharates, and this probably was responsible for the failure. In another case, which occurred in Copenhagen, certain portions of the structure failed to set, while the main building was excellent. In the cement, which had not properly hardened, sugar was found to be present to the extent of 2 parts per 100. This appeared to be due to the cement having been packed in sugar bags. It has been generally proved that the presence of sugar in cement mortar destroys the resistance to the Le Chatelier test, and lowers the strength of the mortar in proportion to the amount of sugar present.

Rayon Manufacture Simplification

ACCORDING to Fairchild's News Service, a group of textile chemists, headed by J. E. Livingstone, of 229, Berkley Street, Boston, have perfected a simplified process of making acetate silk, and, while the results obtained in this method are almost the same as those of the present system, it has for its main advantage the elimination of two or three steps which are now required. An organisation for the manufacture and marketing of the new product is now in the stages of development, and it is expected that details regarding the new company will be forthcoming within the next few months. While the names of the other chemists interested are not known at present, it is stated that men formerly connected with the Du Pont Co., of Baltimore, and the Lustron Co., of Boston, are involved.

Chilean Nitrate and Iodine Supply

THE Nitrate Producers' Association has issued an announcement that recent forecasts state that the reserves of nitrate grounds belonging to the Chilean Government, excluding those privately owned, contain quantities that it is impossible to estimate accurately, but the most pessimistic calculations place the quantity of known deposits as sufficient to cover the world's needs for about 200 years. After the exhaustion of the grounds containing raw material workable for nitrates, much ground with a high percentage of iodine could be recovered. The statement adds that there is sufficient iodine to meet the world's needs for several centuries, and points out that the present productive capacity of Chilean iodine far exceeds the present world's demand.

Synthetic Liquid Ammonia in Norway

THE Norsk Hydro, it is stated, will shortly expend several million kroner on erecting works for the synthetic production of liquid ammonia by a process believed to be similar to the German Haber method. The company uses liquid ammonia and nitric acid extensively for the production of explosive ammonium nitrate and formerly obtained its supplies of ammonia from Odda, where it is made from cynamide. The new proposal, it appears, is intended to make the concern independent of this supply and to reduce costs, but there is, it is believed, no question of increasing the production of ammonium nitrate.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, August 31, 1926.

THE heavy chemical market continues to be very quiet and there is not much possibility of any larger movement until the coal trouble is settled. Although the demand for all classes of chemicals is very poor, prices on the whole are steady. This applies to both continental and home products.

Industrial Chemicals

ACID ACETIC, 98/100%.—£55 to £67 per ton, according to quality and packing, c.i.f. U.K. port; 80% pure, £39 to £41 per ton; 80% technical, £38 to £39 per ton, c.i.f. U.K. ports.

ACID BORIC.—Crystal, granulated or small flakes, £37 per ton; powdered, £39 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—Quoted price unchanged at 4⅝d. per lb., delivered or f.o.b. U.K. ports.

ACID CITRIC, B.P. CRYSTALS.—On offer at 1s. 3⅜d. per lb., less 5% ex store. Offered for prompt shipment at 1s. 3⅛d. per lb., less 5%, ex wharf.

ACID FORMIC, 85%.—Some cheaper continental offers. Now quoted £50 per ton, c.i.f. U.K. ports. Spot material on offer at £53 10s. per ton, ex store.

ACID HYDROCHLORIC.—In little demand. Price 6s. 6d. per carboy, ex works.

ACID NITRIC, 80%.—Usual steady demand and price unchanged at £23 5s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—Now quoted 3¾d. per lb., ex wharf, duty paid, for prompt shipment from the continent. Spot material on offer at 3⅝d. per lb., ex store.

ACID SULPHURIC.—144°, £3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—In moderate demand and price unchanged at 11¾d. per lb., less 5%, ex store. Offered for prompt shipment at 11⅛d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE, 17/18%, IRON FREE.—On offer from the continent at about £5 8s. 6d. per ton, c.i.f. U.K. ports. Spot material quoted £6 5s. per ton, ex store.

ALUM, LUMP POTASH.—Spot material now quoted £9 2s. 6d. per ton, ex store. On offer from the continent at £7 15s. per ton, c.i.f. U.K. ports. Crystal powder quoted £7 10s. per ton, c.i.f. U.K. ports. Spot material £8 5s. per ton, ex store.

AMMONIA ANHYDROUS.—Imported material selling at about 11¼d. to 11½d. per lb., ex wharf, containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks, delivered or f.o.b. U.K. ports.

AMMONIA LIQUID, 880°.—Unchanged at about 2½d. to 3d. per lb., delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £23 10s. to £25 10s. per ton, ex station. Continental on offer at about £21 10s. per ton, c.i.f. U.K. ports. Fine white crystals of continental manufacture quoted £18 5s. per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—In little demand and price unchanged at £16 5s. per ton, ex store, spot delivery. Quoted £15 10s. per ton, ex wharf, prompt despatch from mines.

BARIUM CARBONATE, 98/100%.—White powdered quality quoted £6 15s. per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE.—Spot material unchanged at £9 15s. per ton, ex store. Quoted £8 15s. per ton, c.i.f. U.K. ports, prompt shipment.

BLEACHING POWDER.—English material unchanged at £9 10s. per ton, ex station; contracts 20s. per ton less. Continental now quoted £7 15s. per ton, c.i.f. U.K. ports.

BARYTES.—English material unchanged at £5 5s. per ton, ex works. Continental quoted £5 per ton, c.i.f. U.K. ports.

BORAX.—Granulated, £22 10s. per ton; crystals, £23 per ton; powdered, £24 per ton, carriage paid U.K. stations.

CALCIUM CHLORIDE.—English manufacturer's price unchanged at £5 12s. 6d. to £5 17s. 6d. per ton, ex station. Continental quoted £3 17s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works or £4 2s. 6d. per ton, f.o.b. U.K. port, for export.

COPPER SULPHATE, 99/100%.—Continental material on offer at about £22 10s. per ton, ex wharf. English material for export quoted £23 5s. per ton, f.o.b. U.K. ports.

FORMALDEHYDE, 40%.—Spot material quoted £40 per ton, ex store. Quoted £39 per ton, c.i.f. U.K. ports, early shipment.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental quoted £2 17s. 6d. per ton, c.i.f. U.K. ports.

LEAD, RED.—Imported material on offer at £39 per ton, ex store.

LEAD, WHITE.—Now quoted £39 10s. per ton, ex store.

LEAD, ACETATE.—White crystals quoted £45 per ton, c.i.f. U.K. ports, prompt shipment. Brown about £40 10s. per ton, c.i.f. U.K. ports.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store, in moderate demand.

POTASH CAUSTIC, 88/92%.—Syndicate prices vary from £25 10s. to £28 15s. per ton, c.i.f. U.K. ports, according to quantity and destination. Spot material available at about £29 per ton.

POTASSIUM BICHROMATE.—Unchanged at 4½d. per lb., delivered.

POTASSIUM CARBONATE, 96/98%, quoted £25 5s. per ton, ex wharf, early delivery. Spot material on offer at £26 10s. per ton, ex store. 90/94% quality quoted £22 5s. per ton, c.i.f. U.K. ports.

POTASSIUM CHLORATE, 98/100%.—Powdered on offer at £26 15s. per ton, c.i.f. U.K. ports. Crystals, £28 per ton, c.i.f. U.K. ports.

POTASSIUM NITRATE (SALTPETRE).—Quoted £22 per ton, c.i.f. U.K. ports. Spot material on offer at £24 5s. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 7¼d. per lb., ex store, spot delivery. To come forward 7d. per lb., ex wharf.

POTASSIUM PRUSSIATE, YELLOW.—Quoted 7d. per lb., ex store, spot delivery. On offer from the Continent at 6¾d. per lb., c.i.f. U.K. ports.

SODA CAUSTIC.—76/77%, £17 10s. per ton; 70/72%, £16 2s. 6d. per ton; broken, 60%, £16 12s. 6d. per ton; powdered, 98/99%, £20 17s. 6d. per ton. All carriage paid U.K. stations, spot delivery. Contracts, 20s. per ton less.

SODIUM ACETATE.—English material quoted £22 per ton, ex station. Continental on offer at about £20 10s. per ton, ex store, or to come forward £19 15s. per ton, c.i.f. U.K. ports.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—English price unchanged at 3½d. per lb., delivered.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station; powdered or pea quality, £1 7s. 6d. per ton more; Alkali, 58%, £8 12s. 3d. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £9 per ton, ex station, minimum 4 ton lots; pea crystals £14 10s. per ton, ex station. Continental commercial on offer at about £7 15s. per ton, c.i.f. U.K. ports.

SODIUM NITRATE.—Quoted £13 per ton, ex store; 96/98%, refined quality, 7s. 6d. per ton extra.

SODIUM NITRITE, 100%.—Quoted £24 per ton, ex store. Offered from the Continent at about £22 5s. per ton, c.i.f. U.K. ports.

SODIUM PRUSSIATE, YELLOW.—Spot material easier at 3⅝d. per lb. ex store. Offered for early shipment from the Continent at a fraction less, ex wharf.

SODIUM SULPHATE, SALTCAKE.—Price for home consumption, £3 10s. per ton, ex works. Good inquiry for export and higher prices obtainable.

SODIUM SULPHIDE, 60/62%.—Solid, £13 5s. per ton; broken, £14 5s. per ton; flake, £15 5s. per ton; crystals, 31/34%, £8 12s. 6d. per ton. All delivered buyers' works U.K., minimum 5 ton lots with slight reduction for contracts; 60/62%, solid quality offered from the continent at about £9 per ton, c.i.f. U.K. ports; broken quality, 15s. per ton more; crystals, 30/32%, about £6 15s. per ton, c.i.f. U.K. ports.

SULPHUR.—Flowers, £11 10s. per ton; roll, £10 5s. per ton; rock, £10 5s. per ton; floristella, £9 15s. per ton; ground American £9 per ton, ex store, spot delivery. Prices nominal.

ZINC CHLORIDE.—British material, 96/98%, quoted £23 15s. per ton, f.o.b. U.K. ports; 98/100%, solid on offer from the continent at about £21 15s. per ton, c.i.f. U.K. ports; powdered, 20s. per ton extra.

ZINC SULPHATE.—Continental make on offer at about £11 per ton ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Coal Tar Intermediates

H. ACID.—3s. 3d. per lb., some inquiries.

PARANITRANILINE.—1s. 9d. per lb., some inquiries.

BENZIDINE BASE.—3s. 3d. per lb., fair home inquiries.

ALPHA NAPHTHOL.—2s. per lb., fair home inquiries.

Manchester Chemical Market

[From Our Own Correspondent.]

Manchester, September 2, 1926.

Values on the chemical market here have been rather steadier during the past week; certainly no further changes of major importance have taken place and the general opinion seems to be that prices all round are about as low as they can be. What the effect will be of the higher prices which home chemical manufacturers have been paying for their coal supplies during the past few months is not yet apparent, soda ash, so far, being about the only material that has been advanced. It is not improbable, however, that even a slight improvement in the general demand for chemicals will have a strengthening effect on prices. In the meantime, both home and export buying is on a quiet scale.

Heavy Chemicals

For acetate of soda the demand is moderate, although prices remain fairly steady at £20 10s. per ton. Sulphide of sodium has not changed much since last week, but the call for this material is still slow; about £10 10s. per ton is quoted for 60-65 per cent. concentrated solid and £8 5s. for commercial crystals. Alkali, 58 per cent. strength, is maintained at its recent advance to £7 per ton, and a fair trade is being done. Phosphate of soda continues dull, but is still being offered at about £12 10s. per ton. Bicarbonate of soda is in quiet demand at round £10 10s. per ton. Bleaching powder is in moderate request, and prices are steady at £8 10s. per ton. Hyposulphite of soda, photographic quality, is unchanged at round £15 10s. per ton, with commercial quoted at £9 10s.; inquiry for this is limited. Bichromate of soda is in quiet demand and continues to be quoted at about 3¼d. per lb. There is little movement either in saltcake or glauber salts, but prices are unchanged at £3 5s. and £3 15s. per ton respectively. Nitrite of soda is slow but steady at £20 per ton. Prussiate of soda is on the easy side at 3¾d. per lb., and sales are limited. Chlorate of soda is in rather quiet demand at 3½d. to 3¼d. per lb. Caustic soda prices are well held at from £15 2s. 6d. per ton for 60 per cent. to £17 10s. for 76 per cent. material, and a fair business continues to be done.

Among the potash compounds yellow prussiate is in limited request but at 6⅞d. per lb. prices show little further change. Bichromate of potash is fully maintained at 4½d. to 4¼d. per lb. The demand for carbonate of potash is on moderate lines and values are steady at £26 to £26 5s. per ton. Caustic potash meets with some inquiry at £27 per ton. Chlorate of potash is still rather a slow seller at about 3¾d. per lb. Permanganate of potash, while fairly steady, is not attracting much interest just now; B.P. material is quoted at about 6⅞d. per lb. and commercial at 5¼d.

The demand for arsenic remains disappointingly small, but prices have been held at about the level last quoted, white powdered, Cornish makes, offering at £13 5s. to £13 10s. per ton, on rails. Sulphate of copper meets with some inquiry at round £23 per ton, f.o.b. Nitrate of lead is quiet but steady at £41 per ton. White acetate of lead keeps rather firm at about £46 10s. per ton, with brown quoted at £42. There is not much call for acetate of lime, but values are maintained at £17 10s. per ton for the grey material and £8 for brown.

Acids and Tar Products

A quiet demand has been reported this week for acetic acid at fairly steady prices, 80 per cent. commercial offering at £38 and glacial at round £67 per ton. Oxalic continues slow at 3½d. per lb. Citric acid has been offered during the week at about 1s. 3¼d. per lb., but there is not much trade passing in this at the moment. Tartaric acid is also on the quiet side, but prices seem to be fairly steady at 11⅜d. per lb.

Scarcity of the coal-tar products continues to be reflected in prices. For next season's shipment 100s. per ton, f.o.b., has been quoted during the last few days for pitch. For most other lines quotations are largely nominal, with solvent naphtha at 1s. 11d. per gallon, creosote oil at 7½d., and cresylic acid at round 2s.

Beet Sugar Companies' Accounts

On Saturday, August 21, in White Paper form, the balance sheets as at March 31, 1926, of the eight sugar beet factories benefiting by Government subsidies were issued. In no case is a profit and loss account given in the White Paper, so that in most cases the balance, except possibly in the case of the Orchard, is accumulated. The balance of the English Beet Sugar Corporation shows a credit balance of £56,313, the general reserve being £143,720. There is due to Home-Grown Sugar £27,758. Home-Grown Sugar shows a credit balance of £3,125. Capital reserve is £24,293 and general reserve £21,394. The Ely Beet Sugar Factory records a credit balance of £15,000 and a general reserve of £6,066. There is owing to the English Beet Sugar Corporation £40,000. A credit balance of £12,500 is shown in the accounts of the Ipswich Beet Sugar Factory with a reserve of £1,443. The Anglo-Scottish Beet Sugar Corporation has a debit balance of £972 and preliminary expenses figure in the accounts at £10,215. There is £370,000 Five per Cent. Debenture stock with a Treasury guarantee. The West Midland Sugar Company records a credit balance of £2,127. Preliminary expenses, including payment to Anglo-Scottish Beet Sugar Corporation, total £23,640. There is a debenture loan of £150,000 guaranteed by the Government. A profit and loss debit of £63,245 appears in the balance-sheet of the United Sugar Company and preliminary expenses amount to £3,177. There is a bank loan of £117,000. A loss of £40,889 was experienced by the Orchard Sugar Company during the year, and the payment of a Preference dividend increased the debit balance to £42,214. Preliminary expenses and underwriting commission figure for £17,690. There is a Five per Cent. Guaranteed Loan of £80,000.

Non-Corrosive Material Derived from Rubber

A substance having a rubber base and all the chemically resistant properties of rubber, while being of high tensile strength and not brittle, is being manufactured by the Oliver-Sherwood Co. This non-corrosive substance, Olivite, can be moulded to make vessels or mechanical parts, and can also be used as a lining. It finds application, for example, as a lining in the Olivite centrifugal pumps, which are claimed to be non-corroded by practically all mineral and organic acids and salts, with the exception of concentrated nitric acid. Olivite lined steel pipe and fittings with all the strength and simplicity of manipulation of steel pipe, but with the non-corrosive features of hard rubber pipe and fittings, are now being developed. Chemical apparatus such as agitators, digesters, maceraters and autoclaves are susceptible of being lined with Olivite.

The durability of Olivite lining is demonstrated by a digester now in use which is being subjected for thirty minutes to temperatures of 250° F. under high pressure, then rapidly emptied and chilled with cold water to 50°. The Olivite lining under this treatment is said to show no signs of cracking or breaking away from its steel backing. Olivite can be made in certain forms and shapes with an extremely tough, resilient surface which will withstand the wear of sharp abrasives such as sand and granular precipitates. Bearings of "Cutless" grade Olivite may be submerged in chemical pulps without being cut and without cutting the shafting.

Anti-Corrosion Material for Bench Tops, Etc.

Technolite is a material as hard as crystal and possessing a brilliant fire-polished surface, which acids or alkalis cannot stain, and which can be kept scrupulously clean and sterile with a minimum amount of trouble. It is cast in sheets up to 108 in. by 40 in. in thicknesses from ¼ in. to 1 in. It can be cut, bent to avoid sharp angles, drilled with holes to take fittings, and its edges bevelled and polished. It is made snow-white in several specified thicknesses and jet black in 5/16 in. to ¾ in. It is suitable for bench or table tops, shelves, etc., for bacteriological work, and testing of foodstuffs, etc., and also for titration benches, as its pure white surface always looks clean and attractive. Where burners are used, special mats with air space are advisable. The material is marketed by A. Gallenkamp and Co., Ltd., of 19 and 20, Sun Street, Finsbury Square, London.

Company News

NEW TAMAKUGAL NITRATE CO.—The company announces an interim dividend of 5 per cent. for the year to July 31 last.

ELLIOTT'S METAL.—A final dividend on the ordinary shares of 1s. per share, making 2s. per share for the year ended July 31 last, less tax, is payable on September 20.

SHAWINIGAN WATER AND POWER.—The directors have declared a dividend of $2 per share on the common shares for the year ending September 30, payable on October 11.

STAVELEY COAL AND IRON CO.—The directors recommend a final dividend of 6d. per share on the fully-paid and 4½d. per share on the partly-paid shares, making 5 per cent. for the year, free of tax.

PENNSYLVANIA WATER AND POWER.—A dividend of $2 has been declared on the common shares for the quarter ended September 30, payable on October 1 to shareholders of record on September 17.

ARNOLD I. VAN DEN BERGHS EMBALLAGE FABRIEKEN.—The net profits for the year ended April 30 were £19,293, and £5,607 was brought forward. A dividend of 6 per cent., and a bonus of 2 per cent. are proposed, adding £710 to the reserve, and carrying forward £4,820.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

FINE CHEMICALS, ETC.—An agent in Vienna with good connections desires to secure the representation of British manufacturers. (Reference No. 289.)

CHEMICALS AND LINSEED OIL.—A firm of agents in Oslo are desirous of securing the representation of British manufacturers of linseed oil, oleine, wood oils and chemicals used in the manufacture of woollen goods. (Reference No. 299.)

LINSEED OIL, PAINTS, ETC.—The National Administration of the Port of Montevideo invites tenders for presentation by October 28. Local representation is essential. (Reference No. CX 2055.)

Tariff Changes

POLAND.—An order was issued on July 19, by virtue of which the import duties on pig iron imported for the manufacture of certain goods is to be refunded on the exportation of these goods from Poland. Refund is made on the basis of export certificates issued for each consignment by competent Customs officers in virtue of special certificates issued by export organisations, after they have ascertained that the goods have left the country. This order took effect as from July 29 and affects the Polish Customs Tariff Nos. 140 (2), 140 (3), 140 (4), 140 (6), 140 (7), 140 (8), 141 (2), 152 (1), 155 (1A) and 174 (1A). An order effective as from July 29, prescribes the benefit of refund of duty on chemicals and dyes used in the preparation of certain fabrics for export from Poland.

DANZIG.—Permission has been granted for the export from Danzig, on payment of a reduced rate of duty on certain quantities of scrap iron or steel, copper shavings, phosphor bronze, tombac, Britannia metal, etc. The "contingents" specified are for exports effected during the period April 1, 1926, to March 31, 1927.

INDIA.—The *Indian Trade Journal* of July 29 contains a notification (No. 24, dated July 19, 1926), issued by the Government of India in the Finance Department (Central Revenues) that in exercise of the powers conferred by Section 23 of the Sea Customs Act, 1878 (VIII. of 1878), the Governor-General in Council exempts (i) steel rod of the kind described in Item 151 of Schedule II. to the Indian Tariff Act, 1894 (VIII. of 1894), and measuring less than half an inch in diameter, and (ii) round steel bar of the kind described in Item 151 of Schedule II. to the Indian Tariff Act, 1894, and measuring less than half an inch in diameter, from so much of the duty leviable under that item as is in excess of a duty of 10 per cent. ad valorem.

JAPAN.—The second paragraph of Art. V. of the Japanese Customs Tariff Law provides for the imposition, on the recommendation of a Dumping Investigation Commission, of additional duties in the case of the importation of goods or the sale of imported goods at an unfair price liable to threaten an important Japanese industry with injury.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us by Mr. H. T. P. Gee, Patent and Trade Mark Agent, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following Trade Mark can be lodged up to September 18, 1926.

"FAIRY SOAP."

471,043. For disinfectant soap. Class 2. Thomas Hedley and Co., Ltd., Fairy Soap Works, City Road, Newcastle-on-Tyne, manufacturers. July 1, 1926. (To be associated. Sect. 24.)

Opposition to the Registration of the following Trade Marks can be lodged up to October 1, 1926.

"GLAZOID."

469,927.—For chemical substances used in manufactures, photography or philosophical research, and anti-corrosives, but not including stains for leather or electrolytes and not including any goods of a like kind to stain for leather or electrolytes. Class 1. Roberts, Glazebrook and Co., Ltd., Tyseley paint and varnish works, James Road, Tyseley, Birmingham; manufacturers. May 20, 1926.

"DAMPREV."

470,772.—For chemical substances used in manufactures, photography or philosophical research, and anti-corrosives. Class 1. W. S. Merrikin, Ltd., Greenland Works, Bankside, Hull; paint, colour and varnish manufacturers. June 21, 1926.

"AQUARISTO."

471,040.—June 30, 1926. For particulars, see above, No. 470,772.

"METOL-JOHNSONS."

470,821.—Metol, being a chemical substance used in photography. Class 1. Johnson and Sons, Manufacturing Chemists, Ltd., 23, Cross Street, Finsbury, London, E.C.2; manufacturers. June 23, 1926.

"AMIDOL-JOHNSON."

470,822.—For amidol, being a chemical substance used in photography. For particulars, see above, No. 470,821.

"APHAROL."

470,986.—For chemical substances prepared for use in medicine and pharmacy, but not including aperient medicines, and not including any goods of a like kind aperient medicines. Class 3. British Colloids, Ltd., The Crookes' Laboratories, 22, Chenies Street, Tottenham Court Road, London, W.C.1; manufacturing chemists. June 29, 1926.

"STANGOLD."

471,106.—For chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives. Class 1. Augustus Bruce Starke, trading as Bruce Starke and Co., 16, Water Lane, Great Tower Street, London, E.C.3; merchant. July 2, 1926. (To be associated. Sect. 24.)

"STANGOLD."

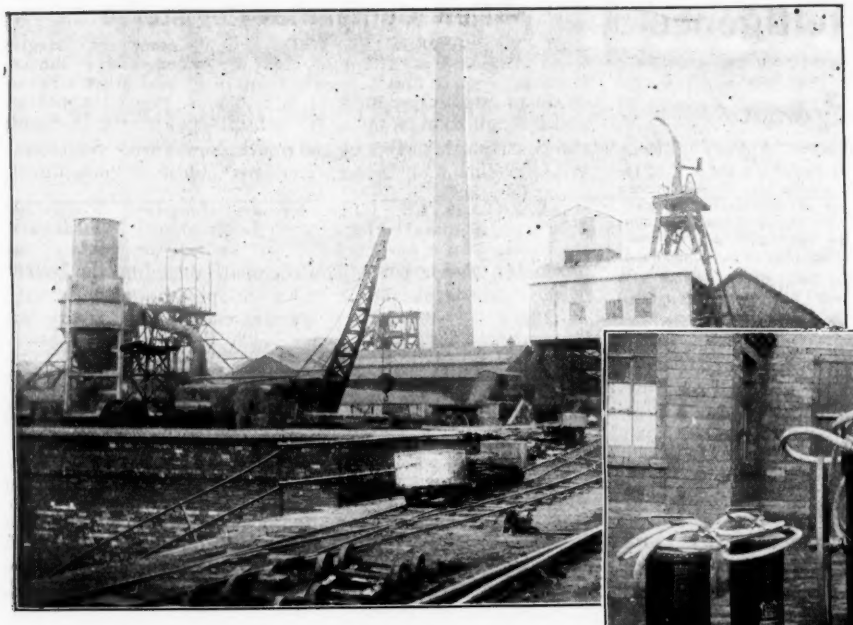
471,107.—For raw or partly prepared vegetable, animal, and mineral substances used in manufactures. Class 4. For particulars see above, No. 471,106.

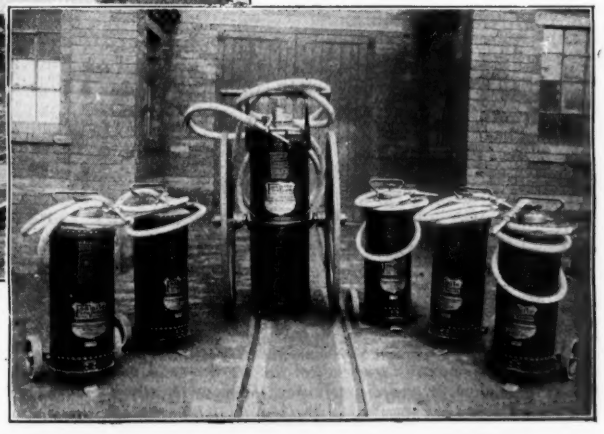
"PARMOZA."

471,496.—For deodorisers. Class 2. Tom Stacey, 13, Travers Road, Holloway, London, N.7; manufacturer. July 15, 1926.

"LACSIN."

471,849.—For chemical substances, used in manufactures, photography, or philosophical research, and anti-corrosives. Class 1. J. W. and C. J. Phillips, Ltd., 23, College Hill, Cannon Street, London, E.C.4; engineers and contractors. July 27, 1926.





A general view of Sneyd Colliery and a part of the special fire equipment—a 34-gallon and five 10-gallon Foamite Engines—installed to ensure that uncontrolled fire should not be a menace

Safeguard production against the fire menace

DIMINISHED production as the outcome of a fire invariably means heavy loss. *This menace can only be guarded against by installing appliances adapted to the risk involved.*

Backed by a Company manufacturing every type of first-aid appliance, Foamite Fire Protection Engineers are able to prescribe *the right protection in the right place.*

LIQUID—or GAS—or FOAM

For ordinary fires, the "Firespray," which ejects mainly water, may be adequate. It is *not* recommended for extra hazardous risks where inflammable liquids are used or stored.

For some purposes a heavy gas, as produced by Carbon Tetrachloride machines like the "Fire-Gun," is a suitable extinguishing medium. How often though are such devices used upon fires which are outside their scope!

The only sure way to put out blazing petrol, paint, varnish, etc., is by the application of Firefoam, which is produced by Foamite appliances. By blanketing the surface of the liquid with a layer of tough, heat-resisting foam, the air is excluded and combustion ceases. Firefoam kills all ordinary fires. It is also used at numerous electrical power stations.

Foamite representatives are always ready to demonstrate upon request the form of protection best suited to your particular risk.

Send for a free copy of the booklet entitled *Extinguishing Oil and Other Fires.*

FOAMITE FIREFOAM, LTD.
24/26 MADDOX STREET, LONDON, W.1
Representatives in all leading towns

Foamite Fire Protection

A Complete Engineering Service

Against Fire

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

MAINLAND, Malcolm Smyth, Rameses, Pharaoh's Island, Shepperton-on-Thames, analytical chemist. (C.C., 4/9/26.) £28 13s. 10d. June 29.

PROPRIETORY AND SUNDRIES SUPPLY CO., LTD., Westfield Works, Portsmouth Road, Surbiton, druggists' sundriesmen. (C.C., 4/9/26.) £12 18s. 1d. July 15.

SENIOR, CROZIER AND CO., LTD., Union Works, Union Street, Stratford, manufacturing chemists. (C.C., 4/9/26.) £10 11s. 10d. June 15.

Mortgages and Charges

*[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]*

BRITISH AND COLONIAL CHEMICAL CO., LTD., London, S.W. (M., 4/9/26.) Registered August 17, £2,050 debenture, to J. M. Hastings, 91, Victoria Street, S.W.; general charge. *——. September 8, 1925.

EVANS, SONS, LESCHER AND WEBB, LTD., Liverpool, manufacturing chemists. (M., 4/9/26.) Registered August 19, £26,000 mortgage, to The London Assurance, 1, King William Street, E.C.; charged on 1 to 9 (odd), Seel Street, and 56, Hanover Street, Liverpool.

WESTERN LABORATORIES, LTD., London, W., celluloid manufacturers. (M., 4/9/26.) Registered August 12, £450 charge, to building society; charged on 11, Hanbury Road, Acton. *£207. July 3, 1926.

Satisfaction

BRITISH COLLOIDS, LTD., London, W.C., chemists. (M.S., 4/9/26.) Satisfaction registered August 11, £10,000, registered March 11, 1922.

London Gazette, &c.

Companies Winding Up Voluntarily

MALLINSON (G. A.), LTD. (C.W.U.V., 4/9/26.) By special resolution, August 5, confirmed August 23. F. E. Green, Duchy Chambers, Clarence Street, Albert Square, Manchester, appointed liquidator. Meeting of creditors at the office of Jackson and Co., solicitors, Lower Gates, Rochdale, on Wednesday, September 8, at 11 a.m. All debts have been or will be paid in full.

SULPHATE OF ALUMINA CO., LTD. (C.W.U.V., 4/9/26.) By special resolution, August 6, confirmed August 23. H. Wrigley, 68, Church Road, Urmston, appointed liquidator. Meeting of creditors at the office of Brierley and Hudson, 32, Lord Street, Rochdale, on Thursday, September 9, at 3 p.m.

Bankruptcy Information

CRAWSHAW, Ralph Durnford, 17, Clifton Road, Alexandra Park, Middlesex, manufacturing chemist. (R.O., 4/9/26.) Receiving order, August 25. Creditor's petition.

New Companies Registered

BINNEY AND SMITH, LTD.—Private company. Registered August 27. Nominal capital, £2,000 in £1 shares. Manufacturers of and dealers in lamp black and other kindred products and by-products of oil; blacks, pigments, pastes, polishes and colours, etc. The subscribers are: C. H. Smith and N. L. Smith, of Binney and Smith, New York. Solicitors: Wild, Collins and Crosse, Kennans House, Crown Court, Cheapside, E.C.

DAZZAL DYES, LTD.—Private company. Registered July 23. Nominal capital, £500 in £1 shares. To acquire the business of a dye manufacturer and all the assets of the proprietor used in connection therewith including the benefit of the trade mark 388731 and to adopt an agreement with A. Black, of Manchester, permanent governing director, Secretary: C. N. Rigg, Green Bank, Barkers Lane, Sale.

KET METAL AND DEVELOPMENT CO., LTD., 75, Windsor House, Victoria Street, Westminster, S.W.1.—Private company. Registered August 31. Nom. cap., £30,000 in £1,000 shares. Chemical, etc., engineers; steel makers and converters, general metal workers, metal brokers, metallurgists, etc.

NORTH EASTERN IRON REFINING CO., LTD., Iron Refinery, Stillington, Via Ferryhill, Co. Durham.—Private company. Registered August 31. Nom. cap., £15,000 in £1 shares. Iron refiners, etc., metallurgists, dealers in chemicals, etc. The directors are: W. Thomlinson, The Green, Seaton Carew, Co. Durham, ironmaster; P. Kirk, F. F. Sharpe, and H. Kirk.

A Handy Ultra-Violet Spectroscope

AN ultra-violet spectroscope which is stated to be especially useful for rapid determinations in industrial workshops, electro-medical establishments, etc., where a more complicated apparatus is inconvenient for use, has been put on the market by R. and J. Beck, Ltd., of 69, Mortimer Street, London, W.1. It has an accurately made slit through which the light passes on to a quartz prism, forming a spectrum upon a fluorescent screen. The spectrum thus formed is examined by an eyepiece, giving a magnified image. The eyepiece is provided with a focussing motion and an eye cup to exclude extraneous light. Beside the spectrum in the field of view is an illuminated scale, divided in Angstrom Units, so that the wave-length of any portion of the spectrum under observation can be determined. The scale appears with illuminated lines and figures upon a black background, the illumination being obtained through a window in the instrument by means of the visible light in the light source under examination, so that no additional source of light for illuminating the scale is necessary. The spectrum included in the field of view is from 2,000 A.N. to 4,500 A.N., which includes a small portion of the visible light. The instrument is small and is of a shape that renders it convenient for use in the hand. It can also be supplied fitted on a stand. It has been designed with a view to giving a particularly brilliant spectrum, thus rendering it easily used in daylight and with the same ease as a spectroscope for visual light.

"Cling-Surface" and "Permac"

THOMAS AND BISHOP, LTD., London, announce two specialities which are of interest to chemical manufacturers, namely, "Cling-Surface" belt preservative and "Permac" jointing material. "Cling-Surface" has been on the market for nearly 30 years and is widely recognised as a preservative for leather, balata, hair, and other belts. In this country alone it is used in over 45,000 factories. The chief advantage of "Cling-Surface" is that it enables a belt to run easy or slack without slip. In chemical plants "Cling-Surface" is found to be satisfactory for belts that work in places exposed to acid fumes. "Permac" is a rustless powder which is made into a stiff putty by adding boiled linseed oil. A ribbon of this putty is placed round one flange; the other flange is then put into position, and the two are bolted up tight. This simple job results in a joint which it is claimed will not blow out, leak or corrode. "Permac" is used extensively for making joints to steam, water, oil and petrol pipes; also in joints of acid and alkali plants. A number of gas companies use "Permac" for joints to toluol and benzol tanks.